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SPECIAL ISSUE

FIELD MOBILITY 2017

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A Look At The Year Ahead

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What Will Field Mobility In 2017 Look Like?

Heading into 2017, we wanted to take the pulse of our audience as it relates to the technologies they are using now, looking to invest in next, and how they are feeling about the latest trends. In this issue, you'll find data compiled from a survey we conducted this fall. We had 321 subscribers provide their insight, which we share here to give you a quantitative look at how your peers are using today's technologies. We also asked a handful of our audience members to lend some more in-depth anecdotal insight and advice. And finally, we welcome VDC Research's analyst perspective on the state of the industry and what you can expect in 2017.

So what will field mobility in 2017 look like? In my opinion, one of the most interesting starting points to answer this question is to look at what our survey respondents said when asked about the drivers for their field mobility investments. Forty-nine percent responded that their primary objective with their field mobility investment is maximizing productivity, followed by 37 percent who answered that improving the customer experience is most important. While maximizing productivity has long been and will remain a major focus, the increase in emphasis on customer experience is notable and interesting. I expect that this trend will continue and advance in 2017, because field service organizations are coming to realize that focusing on the customer is the key to a competitive advantage in today's service landscape.

Identifying And Overcoming Field Service Challenges

But even with clear objectives, improving a field service business isn't without its challenges. The biggest challenges our survey respondents say they are facing with their mobile workforce are a lack of visibility into mobile operations (61 percent), ensuring optimal efficiency (47 percent), and dealing with customer satisfaction issues (39 percent). Dealing with these issues successfully takes a multifaceted approach. Sure, investing in technology is one part of it — but taking a good, hard look at the processes and business practices you have and evaluating how effective they are in helping you achieve your goals is critical. Furthermore, taking steps to better understand the expectations and frustrations of your customer-base is imperative.

Here's the good news — improving your field service business will be easier in 2017 than it has ever been before. Why? Well, for one there is more acknowledgement of the role service plays in today's organizations, which leads to more resources for business improvement both internally (in the form of staff, budget, etc.) and externally (in the form of information and resources to help create your strategy for improvement). From a technology perspective specifically, solutions will continue to become easier, faster, and more affordable to deploy. Easier in that with more organizations leveraging solutions, there are more shining examples to follow. Not to mention, there are more helpful resources than ever before. In fact, 52 percent of our survey respondents are using EMM (enterprise mobility management) or MMS (mobility managed services) currently, and another 21 percent plan to. Solutions are becoming faster to deploy as providers are getting more repetitious from an increase in cloud-based software use. And as more and more companies seek to leverage today's technologies, costs to do so continue to come down — which is especially reassuring to the 54 percent of survey respondents who listed justification of expenditure as their number-one barrier to investment. 2017 is going to be an exciting year in the world of field mobility, and I'm happy to be here to help tell the story!

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ANALYST OUTLOOK

The Growth Of Managed Mobility Solutions For Field Service

Mobility management is rising as a chief priority for CIOs and CTOs worldwide. More than 85 percent of IT decision-makers expect steady or increased year-over-year mobility budgets, according to a recent VDC survey. Challenged to manage increasingly sophisticated mobile technology strategies and deployments, these organizations are procuring third-party technology support through a mobile managed service model. In contrast to traditional professional services, mobile managed services facilitate broader outsourcing of the day-to-day IT operations and processes required to support mobile technology deployments.

David Krebs
executive VP, enterprise mobility & connected devices, VDC Research
www.vdcresearch.com

Managed services serve to improve operations and lower costs while enabling IT to focus on business-critical activities. Enterprises have benefitted from outsourcing functions such as network services, data storage and backup, hosted enterprise applications, security services, and business continuity. Managed services are typically provided on a subscription model with service level agreements (SLAs) in place.

The value proposition for mobility is not too dissimilar. Although enterprise mobile solutions are critical to support business operations — such as field service automation — organizations often struggle to comprehensively support these solutions. Often mobility represents only a small portion of an IT staff's day-to-day responsibilities. However, poorly managed and supported field service solutions can negatively impact key operational metrics. Availability, uptime, and compliance with IT policies trump other end user considerations, making managed services for field service mobile solutions a good fit.

At its core, mobile managed services comprise three disciplines: implementation and deployment, support management and analytics, and life cycle services. Combined, these capabilities offer enterprises a comprehensive suite of services to support mobile requirements from deployment to upgrade. Key capabilities include the following:

Implementation and Deployment: Whether an organization is deploying 50 or 5,000 mobile devices, critical decisions relating to device configuration, kitting, profile management, and business process integration need to be made. According to research recently conducted by VDC, staging/kitting, post deployment testing services, and device provisioning were identified as the services with the greatest impact on a successful mobile deployment. Issues such as not managing profiles efficiently or poor configuration control have represented key process pain points for organizations that can be overcome with better device management. In addition, with a mobile warehouse workforce that turns over rapidly — especially considering temporary support required during peak seasons — the ability to seamlessly and efficiently get these workers trained is critical to these businesses.

Support, Management, and Analytics: Once mobile devices have been deployed, the ability to manage them and provide support services aligns well with the managed services value proposition. This includes everything from ensuring that when a device does fail, the impact on operations is minimal to providing a controlled release process for mobile OS updates and application provisioning. The scarcity of IT resources within organizations today is resulting in major inefficiencies, often leading to cost disadvantages when compared to third-party services organizations.

Life Cycle Services: Often overlooked, life cycle services provide the business continuity required for business-critical mobile solutions such as those supporting warehouse operations. Ensuring that organizations are proactively managing their installed base of mobile devices with clear upgrade goals and the flexibility to adapt to business and technology changes is essential.

There is no shortage of options to consider when evaluating mobile managed services. However, considering the unique requirements of successfully managing mobile devices, certain capabilities trump others when defining quality of service requirements. Few IT departments have built a strong competency in mobility, and while a growing share of enterprises view mobility as strategic, the skills gap remains pronounced. For this reason, employees are demanding support for their mobile devices, and IT is at a crossroads: Either develop competency in mobility or outsource it to a managed mobility or professional services firm. Considering the continued pressure to do more with less, outsourcing is becoming increasingly attractive.

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Magic Quadrant for Field Service Management, 03 November 2016

ANALYST OUTLOOK

The Future Of Mobility Through The Eyes Of Your Techs And Customers

Aly Pinder Jr
director of member research & communities,
The Service Council
www.servicecouncil.com

The world of field service is evolving quite quickly. Just a decade ago, technicians worked in a reactive, paper-based environment where customers and their experiences were a byproduct of a work order. Even as recently as the past few years, technicians were still primarily expected to show up within a schedule window determined by an SLA (service level agreement), turn a wrench, and move on to the next job.

This is no longer the world we live in. The convergence of technology, (specifically mobile devices), customers' expectations, and the consumerization of service has led to new metrics and measurements of success. Customers demand improved service levels and higher quality interactions as options become more abundant. Industries such as manufacturing, aerospace & defense, and HVAC are beginning to see customers who expect the same level of transparency and service as they receive from the pizza place or their online retailer. And finally, the field team assumes they will have work tools which closely mirror the feel and functionality of the tools they use at home to communicate with friends, connect with colleagues, and find information.

This next leap in delivering exceptional field service depends on more than just deploying new mobile devices to the technician. Service organizations must ensure they break the cycle of investment for internal operational gains, and no longer neglect to think about the impact these tools have on the technician, the customer, and other support functions who have to use the data captured by these devices. As you think about mobility and how technology will impact your service future, I would like to share with you a few lessons I recommend you consider:

- **Make a technician's job easier, not more complicated.** Technicians have a difficult enough job as it is; don't make it harder. Mobile tools should streamline administrative tasks and free up the technician to engage with customers to deliver value-added services. A technician on site, in front of a customer, has a wealth of value to the service organization. So don't have them walk through cumbersome workflows or conduct complicated tasks which could be done in the background.
- **Ensure data captured in the field in real time has value to others in the back office.** True ROI from an investment in technology should not just be measured with the payback method but also by the impact and value the tool provides across the organization. Service excellence is not something just field technicians are responsible for; it should be a team effort. Therefore, other functions of the business need access to data captured in the field, and this insight should help them support the field and deliver more customized value to the customer. This mindset should help sales sell products that are a better fit for a customer, marketing specifically to certain segments of the customer base, and engineering design products that resonate better with potential and current customers.
- **Bring your customers into your mobile strategy for the present and the future.** Too often technology investments and other initiatives are viewed solely from the perspective of the internal users and organization, with little or no thought paid to the end customer. Your mobile strategy should involve your customers, and they should be a primary stakeholder in your roadmap. More and more service organizations are looking for ways to connect with their customers and create true partnerships that are difficult for the competition to break.

When I think of mobility, I think of concepts and themes like engagement, empowerment, transparency, insights, and value. If these words don't come to mind, I think you are missing out on the value of what mobile can mean for your service business. The future of mobile shouldn't be about cool new features. The future of technology in mobility must be about the customer experience and the empowerment of the field team to deliver on service promises. Technology for investment's sake is a waste of time, money, effort, and the workforce's goodwill. Initiatives around mobile need to be made strategically with a vision for how these tools will positively impact the lives of technicians and the customer. Without this, you will end up with just another device or app that is underutilized and more a distraction than a tool for success.

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MAJOR THEMES

Understanding The Current Field Service Landscape

Field service organizations (FSOs) are going through a dramatic evolution from primarily reactive operations that are viewed as a cost center by management to much more proactive businesses that are an important — and in some cases primary — revenue center in industries where margins on sales of new products have been cut to the bone. With this evolution comes much opportunity but also a unique set of challenges for today's service organizations to face.

Customer Expectations Are At An All-Time High

At the core of it all, customer expectations are high, and the service experience has become a critical differentiator for field service organizations. That technicians should arrive at the right location, on time, and equipped with necessary tools and parts has become table stakes both for FSOs and technology vendors that help to automate their operations. Service providers also need to add value by offering more proactive maintenance and service, customized service agreements, and a flexible and agile service chain that can respond quickly to customer requests. Customers today expect a service experience from field service organizations similar to what they receive from many consumer-facing services, such as Uber and Netflix. Today's field service organizations are tasked with keeping up with these growing customer expectations and demands.

The challenge doesn't stop there. These FSOs also have to find ways to meet and exceed their customer demands at a reasonable cost, which is likely why the majority of respondents to our survey (56.8 percent) said that ensuring their mobile workers were at optimal efficiency/productivity was one of the top challenges they face related to their mobile workforce.

FSOs also struggle with ensuring that technicians and managers have access to the information they need to effectively provide quality service. Other top challenges cited in the survey data include knowledge sharing and management/technician collaboration (31.3 percent), accurate data capture (30.7 percent), and a lack of visibility into field operations or assets/lack of real-time information exchange (30.7 percent).

"Information management [is a challenge]," says Rich Clark, vice president of field operations at GOJO Industries. "We need the ability to connect disparate data sources in a meaningful/credible way in support of our complex service needs."

Barriers To Field Service Investment

Getting those field automation solutions in place requires commitment and investment from management, but finding ways to prove the ROI for these solutions

Top 5 field service objectives:

1. Maximizing productivity
2. Improving the customer experience
3. Access to better data
4. Reducing costs
5. Increasing revenue

Top 5 barriers to technology investment:

1. Justification of expenditure
2. Limited resources
3. Building a business case
4. Training
5. Employee buy-in

"We are really experiencing more of a pull than a push when it comes to technology adoption. We are going as fast as we can to meet the expectations of our teams, and that bar keeps moving up."

James Mylett, Comfort Systems USA

— at least to the level management wants — can be difficult. According to the survey, 64.3 percent of respondents said that justifying the expenditure was a barrier to technology investment, and 39.5 percent said that building a solid business case was an obstacle for them.

Internal support is another major challenge today's field service organizations are facing, with 41.4 percent saying that having limited resources in their organizations for solution evaluation, deployment, and support was holding back their technology spend. Concerns about training employees and employee adoption were also a problem for 37.6 percent of our respondents.

"Where we do have a barrier to technology investment, it's usually first cost," says James Mylett, senior vice president of service at Comfort Systems USA. "The overwhelming majority of the existing installed base does not have pre-existing data collection capabilities, so we're looking at how to retrofit for that base. Beyond that, we are really experiencing more of a pull than a push when it comes to technology adoption. We are going as fast as we can to meet the expectations of our teams, and that bar keeps moving up. So perhaps another barrier for us is speed to market for the solutions we deploy."

Speed is also an issue at Southwest Airlines, according to Tom Raffalski, manager of safety, standards, and regulatory compliance. "Technology today just changes so rapidly — our own technology/IT team struggles to keep up with the latest advancements," he says.

Top Field Mobility Challenges: We Asked, You Answered

We asked our end user panel to share with us, "What's your organization's biggest field mobility challenge?" and here are some of the pain points that they shared. "Change management is always a big challenge when you have a distributed workforce. As customer expectations evolve, we need to evolve, and that involves change. For example, our customers are looking for a more effortless experience. For some of them that will mean interacting with us via a Web portal. That's a big change for our teams. Other customers are looking for a connected offering whereby we collect data via a device rather than a technician logging the data in person. That's a big change as well," says Mylett.

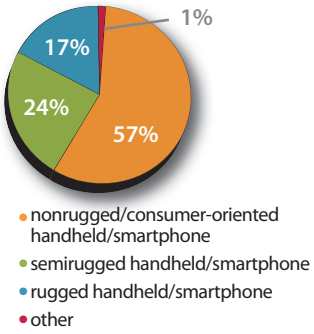
"The fear of technology obsolescence is a barrier to investment for our organization. As the GOJO organization has begun to more fully appreciate the incredible value and benefit of [business intelligence], the ability to fully integrate tools, technology, and information streams has become a prerequisite to adopting new tools/technology. The challenge is that the 'bigger' the universe of information streams becomes, the less likely everything will easily connect, communicate, and integrate easily," explains Clark.

"While we are excited to create an experience that is mobile first and delivers smart solutions, our company's biggest challenge is around technology integration. We're looking to create a single solution for integrating service schedule monitoring as well as fleet management," says Mirza Chughtai, CIO, Miner Corp.

Mobile Device Trends At A Glance

Handhelds & Smartphones

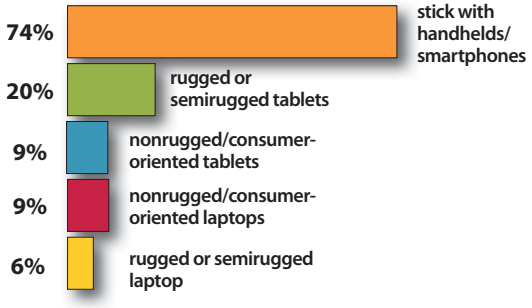
What type of handheld does your mobile workforce use?



Top 3 selection criteria:

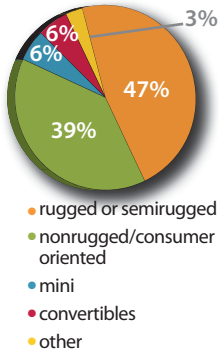
1. Portability
2. Wireless communication capabilities
3. Operating system

Which device form factors do you plan to consider at your next refresh?



Laptops, Notebooks, & Convertibles

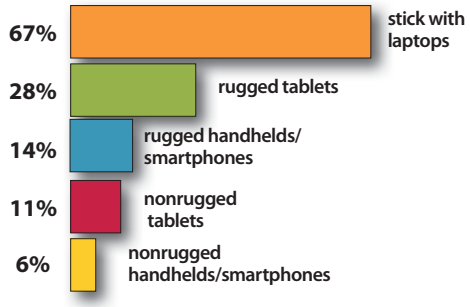
What type of laptop does your mobile workforce use?



Top 3 selection criteria:

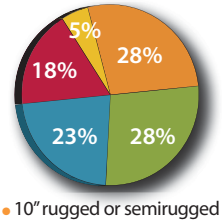
1. Ruggedness/ durability
2. Wireless communication capabilities
3. Ergonomics

Which device form factors do you plan to consider at your next refresh?



Tablets

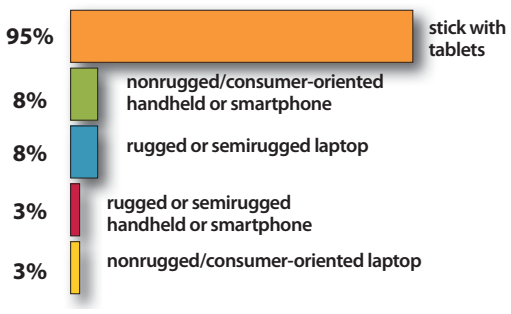
What type of tablet does your mobile workforce use?



Top 3 selection criteria:

1. Cost
2. Operating system
3. Portability Ruggedness/reliability

Which device form factors do you plan to consider at your next refresh?



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Navigating The Increasingly Complex Mobile Device Landscape

The mobile device space continues to be highly dynamic, with companies adopting a wide variety of form factors and operating systems, as well as a mix of both rugged and consumer-grade hardware. Much of the shake-up in the device market has been caused by the use of both smartphones and new tablet devices in field applications.

But handheld devices seem to be making a comeback. While tablets have been the fastest growing mobile device segment for several years, handheld devices still rule in field service. According to our survey, 51.79 percent of respondents are using handhelds or smartphones (up from 45 percent last year), compared to 24.4 percent using tablets and 22.62 percent using laptops, notebooks, or convertibles.

The Current OS Landscape

There has been a relatively rapid shift in operating systems when it comes to enterprise mobile solutions. In the past, Windows and its mobile derivatives (CE, Windows Mobile, etc.) dominated. With the adoption of more consumer-style devices, the landscape has shifted significantly.

Windows is still the most common OS at 31.29 percent, but Apple's iOS is in second place with 26.38 percent of respondents, and Android devices are used by 15.34 percent. Apple's growth in the enterprise has come at the expense of both Windows (which is down nearly 7 percentage points from last year) and Android (which lost almost 3 points).

And the platform's popularity is growing as more enterprises adopt Apple devices. "iOS allowed us to ensure a consistent deployment and seamless experience for partners and technicians," says Mirza Chughtai, CIO at Miner Corp., which is using iPads and iPhones to connect its own field force of 300 technicians, in addition to thousands of third-party contractors.

A lot of enterprises are also using multiple types of devices, with 25.77 percent of respondents saying they use a combination of operating systems. Because of the uncertainty around Microsoft's plans for the mobile space over the past few years and the release of several Android-based rugged devices, you may see some additional shifts in the near future.

While 68.10 percent of respondents said they would remain with the same operating system during their next technology refreshes, 20.86 were not sure. Just less than 5 percent said they were switching to Android.

There is also increasing interest in enterprise mobility management (EMM) and managed mobility services (MMS) solutions, with 51.53 percent currently using them to help plan, provision, maintain, or manage their mobile deployment. Another 21.47 percent are considering such solutions in the future. As David Krebs of VDC Research explained on page 4 of this issue, the value proposition for these services in the enterprise is huge. Many of the challenges we've discussed related to barriers to adoption can be alleviated or at least lessened through the use of EMM and/or MMS.

Consumer Vs. Rugged Devices In The Enterprise

There has also been an increase in the use of both semi-rugged and consumer-oriented/non-rugged devices in field mobility deployments, driven in part by the perception that consumer-oriented devices present a cost savings. Among laptop users, 47.22 percent are using rugged or semi-rugged devices.

When it comes to the next wave of hardware deployments, it appears that, in addition to more handhelds, tablets may eat into applications where laptops have been more common.

Laptop users generally plan to stick with that form factor, with 66.67 percent saying they would deploy another laptop in their next technology refreshes. However, 27.78 percent indicated they would switch to rugged tablets, while another 11.11 percent were considering non-rugged tablets.

The preponderance of consumer-grade hardware is even more apparent with the other form factors. Among handheld/smartphone users, 57.47 percent are using non-rugged or consumer-oriented devices, while 24.14 are using semi-rugged devices, and 17.24 use rugged hardware.

The majority of handheld users plan to stick with handhelds (73.56 percent). Just 19.54 percent of handheld/smartphone users were considering switching to rugged tablets, and another 9.2 percent were considering non-rugged tablets.

The use of rugged or non-rugged devices was much more mixed for companies with tablets. Respondents indicated they were using a fairly equal mix of 10-inch rugged/semi-rugged or non-rugged tablets at 27.50 percent each; 7-inch non-rugged tablets were second at 22.5 percent; and 7-inch rugged or semi-rugged came in third at 17.50 percent.

"Although more than 50 percent of our users were already owners of iOS devices, it has become apparent that their level of proficiency with the devices varied greatly."

Tom Raffalski, Southwest Airlines

Tablet Users Happy With The Form Factor

Tablet users were the most loyal in the sample, with 95 percent saying they would stay with tablets during their next technology refreshes. Just roughly 10 percent each were thinking of switching to a handheld or laptop.

Interestingly, while non-rugged devices are beginning to hold a larger share of the enterprise space, 78.53 percent of respondents said they believe that "some level of ruggedness" is essential for the device their mobile workers use. While replacement costs for consumer hardware tend to be lower, the long-term total cost of ownership (TCO) can in many cases be higher than rugged hardware because of the added cost of employee downtime.

One of the benefits companies often cite in deploying consumer-oriented devices like the iPad is that end users are familiar with the interface. However, as Southwest Airlines found when it deployed iPads for its crews, that comfort level can vary. "Although more than 50 percent of our users were already owners of iOS devices, it has become apparent that their level of proficiency with the devices varied greatly," says Tom Raffalski, manager of safety, standards, and regulatory compliance at Southwest. "Right now, our biggest challenge/goal is to get the majority of our users to a certain level of competency/proficiency, first with the iPad and secondly with our proprietary apps."

Selection Criteria Differ Based On Form Factor

Users with different types of hardware also prioritized their selection criteria differently. Laptop users were most likely to focus on ruggedness/durability and wireless communications capabilities (tied at 52.77 percent), followed by ergonomics (38.88 percent). Processing power/speed, operating system, and cost were tied at third place (33.33 percent).

Tablet users, on the other hand, were more concerned with cost (42.5 percent), followed by operating system (35 percent), portability, and ruggedness/reliability (both at 32.5 percent).

Not surprisingly, handheld users listed portability as their top selection criterion (57.47 percent), followed by wireless communication capabilities (37.93 percent), and operating system (27.58 percent). Ruggedness/durability and cost followed closely at 26.43 percent and 25.28 percent, respectively.

Field service organizations should also pay attention to ease of use when it comes to selection.

"Last year we went through an extensive selection process for a mobile platform. Our overarching criteria came down to two things: Make it easier for our customers to do business with us, and make it easier for our people to get their jobs done. Setting the bar here was a result of a 'voice of the customer' analysis we completed with both constituencies. For us, ease of user adoption is another factor in selection. The feature and functions of a tool are only impactful if they are used. We've found that something that is less robust but more intuitive to the user has a great impact on our business results," says James Mylett, senior vice president of service at Comfort Systems USA.

Finally, even when you are confident in your device selection, you have to keep in mind some of the challenges you'll likely face, regardless of how well you've chosen. "Weaning our users off their previous paper resources/manuals and communications was tough. We still have employees asking for us to restore our web/PC-based resources, which we discontinued when we launched our mobile/iPad platform and app-based resources. Our workforce used paper-based manuals and communications for over 30 years. We also have a highly mobile workforce that spans the country and into parts of Central America. Offering support is a challenge since our crews are often in the air or not at one of the crew bases where we can offer either hardware or application support," explains Raffalski.

Field Service Software: From Basic Use To Beyond

The field service automation software market continues to be highly dynamic, with a number of mergers and acquisitions and new solutions being released. The net effect has been a wide array of full-service software suites that cover a broader number of features (i.e., work order management, inventory, scheduling/routing, etc.), as well as specialized application software and mobile development platforms that allow companies to create forms-based solutions that can be integrated with existing back-office systems.

The vast majority of companies (68.48 percent) are currently using some sort of mobile workforce automation software, such as scheduling, routing, work order management, and other applications. Of the companies that have not yet deployed such software, 46.15 percent plan to deploy field automation software in the near future.

As Rich Clark, vice president of field operations at GOJO, points out, it can be challenging for service organizations to find software that is a good fit for their operations without significant customization. "We're still looking for a full-featured field service solution," Clark says. "We're currently using our existing CRM solution with bolt-on form-based tools to collect and share information. We have poor visibility to workflow and resource availability and capacity. We will need to 'solve' for these challenges if we hope to scale our field service offerings."

Commonly Used Field Service Software Features

When we look at the feature set of the solutions already in place among respondents, the most common applications/functions were dispatch/work order assignment (66.67 percent), service/work order management (65.77 percent), basic scheduling (62.16 percent) and parts/inventory management (55.86 percent).

The top three are common solutions that many service organizations have had for some time and address the most pressing issue of managing a dispersed workforce — how to determine which technicians should have the work orders, how to get the work orders to them, and how to most efficiently document the work once they are on site.

Parts and inventory management is often a "next level" capability for many organizations that are searching for ways to further optimize their operations. By having complete visibility of inventory both at the depot and in the trucks, they can make it easier for technicians to get the parts they need without a lot of wasted windshield time.

Top 5 software selection criteria:

1. Ability to integrate with back-office systems
2. Ease of use
3. Ability to work offline
4. Ability to customize
5. Scalability

47%

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Other common functions among our respondents included routing/navigation (49.55 percent), customer history access/knowledge management (47.75 percent), and accommodating emergency/urgent work (43.24 percent). Again, these are more advanced capabilities that service organizations often investigate once they've streamlined work order assignments and eliminated paper work orders.

Solution Selection Criteria

The most important selection criteria for the software solutions our respondents already have was a near three-way tie among the ability to integrate with current back-office systems (42 percent), the ability to work without connectivity or offline (41 percent), and ease of use/mapped workflow (41 percent). Ease of use was a key consideration across almost all technology segments in our survey, likely because of the impact that the user interface can have on the time and expense required for deployment and staff training.

The ability to configure and customize the solution was the second-most important factor (33 percent), followed by scalability (32 percent) and real-time communication (27 percent).

The Adoption Of Cloud-Based Solutions

Adoption of cloud-based solutions continues to expand in the field service market, with 46.85 percent of respondents noting that their current software is cloud-based. In the past, companies often turned to cloud-based systems because they believed they could reduce their infrastructure and IT support costs. While that is true in some cases, lower upfront costs were much less important to our respondents, with just 15.38 percent of respondents saying it factored into their decisions.

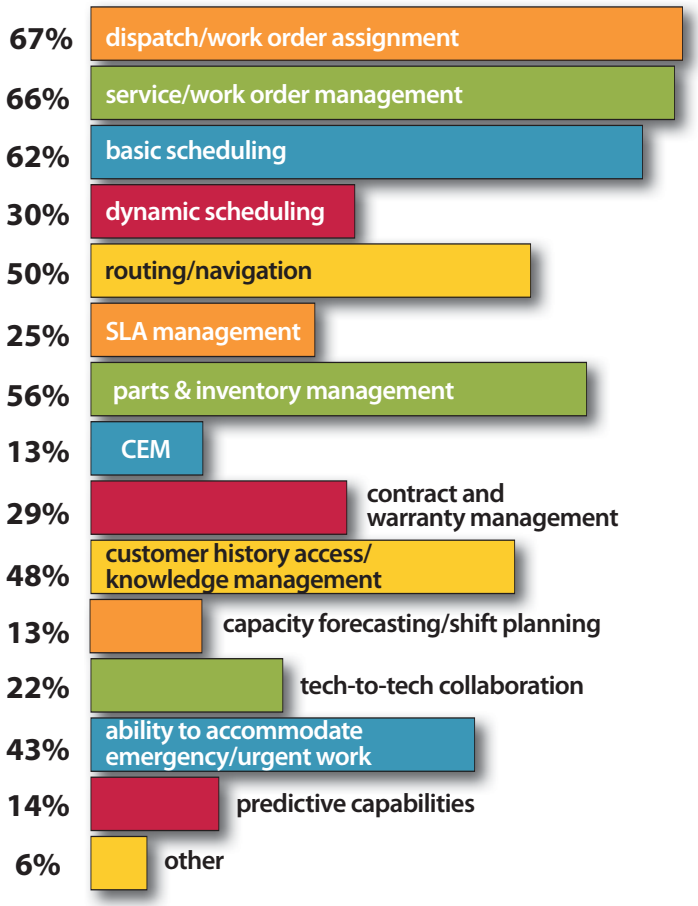
Instead, the ability to deploy the solution quickly was seen as a top reason for selecting cloud-based software at 34.62 percent. Producing less strain on limited IT resources was second, at 25 percent, followed by deploying a device-agnostic solution (also 25 percent).

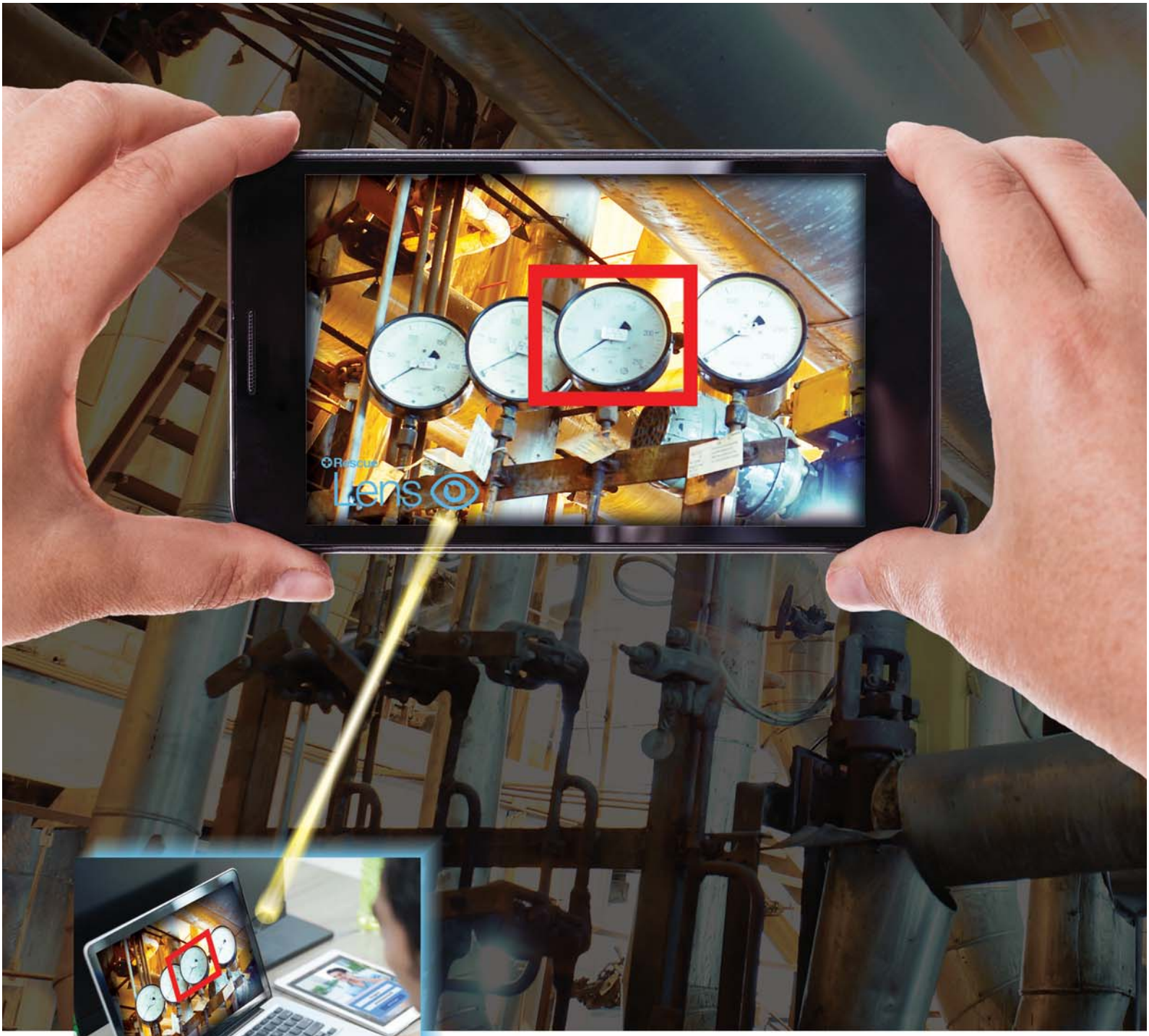
For companies that are planning to deploy a field software solution soon, organizations appear to be focused on some basic functionality that will help automate manual processes. The most sought after function, desired by 56.52 percent of respondents, was service/work order management solutions. Another 39.13 percent would like to include parts and inventory management.

Tied for third place were basic scheduling, accommodating emergency work, dynamic scheduling, and routing/navigation, with 34.78 percent of respondents looking for each of these functions in a future deployment.

As more field service organizations master the basic use of field automation solutions, we expect to see more and more advanced use cases. For instance, companies will begin to incorporate functions like the IoT and augmented reality to further expand their business cases.

What functionality does your company's current software provide?





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The Cost-Cutting Power Of Fleet Management

When it comes to field mobility, our survey respondents, by and large, want to increase their productivity in the field and reduce costs. Those twin goals of achieving a more productive and less costly field operation were also reflected in the fleet management data.

Cost reduction was a critical goal established by our respondents for their GPS/fleet management solutions, which makes sense since fleets represent a huge capital expenditure that includes both vehicle purchases and maintenance. Just over 55 percent of respondents listed reducing fuel costs or reducing overall operating expenses as a top goal for their fleet management deployments. That was just about even with the desire to drive productivity, which was a very close second at 53.44 percent.

Ranking slightly lower on the list were improving visibility into driver location and improving driver safety/reducing accidents and liability. Just less than half of respondents listed either factor as a top priority.

The Valuable Role Fleet Management Plays In Field Service

Fleet solutions improve driver productivity by helping operators streamline their routing and scheduling operations. With real-time data about driver location, staff can dynamically reroute vehicles based on SLA requirements, traffic or weather events, emergency calls, and other factors. The closest technician/driver to the customer can be quickly dispatched to a new service call, and dispatchers can see which jobs are in danger of falling behind and then adjust schedules accordingly.

Fuel costs are another important KPI that fleet management can positively affect. While fuel prices are currently low, they are typically volatile, so using a fleet solution to improve routing and reducing unnecessary idling can generate hundreds of thousands of dollars in savings (or more) each year. In some installations, fuel savings alone can pay for the entire cost of the fleet management solution. Even if "going green" isn't a corporate priority, fuel savings can generate a hefty carbon footprint reduction as well.

The ability to monitor driver location and safety also contribute to cost savings. If drivers know they are "on the radar" of a fleet solution, they are less likely to use vehicles in unauthorized circumstances. Telematics data can also help monitor vehicle condition, as well as driver behaviors like speeding and harsh braking. By improving driver performance, there is less wear and tear on the vehicles and a lower likelihood of accidents or speeding tickets. Some insurance companies even provide discounts to fleet operators for installing GPS systems.

Top 3 goals in deploying fleet management:

1. Reduce fuel costs
2. Reduce overall operating expenses
3. Increase driver productivity

Top 3 criteria for fleet management selection:

1. Reporting functionality
2. Ease of use
3. Ability to integrate with other apps

The value of a fleet solution lies in having quick access to location and driver data. When selecting a solution, most of our respondents (68.42 percent) said that reporting functionality was an important factor. Advanced solutions provide dashboards and customizable alerting functions so that managers can easily view fleet-wide metrics like idling or fuel consumption. They can also receive alerts (an important feature according to 25 percent of respondents) when vehicles leave designated areas (geofencing) or if drivers exceed pre-set speed limits, for example.

As we've seen in some other technology categories, ease of use was critical for these companies when selecting a fleet solution, with 40.35 percent of respondents reporting it as an important factor in their solution selection process. Coming in third was the ability to integrate with other applications (39 percent).

With pressure to provide better customer service, field service organizations can leverage fleet management solutions as a means to ensure their workforce is operating at optimum efficiency and to keep controllable costs (like fuel usage and idling) low.

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INTERNET OF THINGS

The Growth Of IoT In Field Service

The Internet of Things (IoT) is an important and growing technology segment for the field service industry. The ability to connect many different classes of assets and equipment to the network has been enabled by a convergence of several technologies, including low-cost smart sensors, cloud-based computing solutions, Big Data and analytics solutions, secure wireless connections, and dynamic scheduling/dispatch tools that help service companies quickly respond to signals from remote equipment.

Slightly more than 41 percent of our survey respondents are currently using remote monitoring, machine-to-machine (M2M), or IoT technologies to monitor or provide service to assets and products. That figure is likely to grow rapidly, as roughly half of our respondents (47.31 percent) who aren't already using these solutions plan to research using M2M/IoT solutions in the near future.

IoT Enables The Shift To Proactive Service

The interest in IoT is driven by the potential benefits of obtaining, analyzing, and using real-time asset data from the field. Remote monitoring and troubleshooting can increase asset uptime, reduce mean time to repair, and improve first-time fix and remote resolution rates. This type of remote connectivity can help eliminate unnecessary (and costly) truck rolls and ensure that when technicians do have to go on-site, they will have all of the tools and parts necessary to complete the work. Furthermore, the insight that IoT provides can play a major role in enabling companies to provide the more advanced service experience many of their customers are demanding. Namely, IoT data helps an organization shift from a reactive service model to a proactive — and even predictive — one.

The majority of the respondents currently using IoT (just about 50 percent) are using the technolgy to remotely monitor their own equipment. Another 33.85 percent are using the technology to monitor equipment they service at customer sites. Just a handful of respondents is using the IoT for applications like smart meters (common among utility companies) and telematics.

For companies monitoring their own assets, reducing downtime and saving costs on maintenance operations are often the primary drivers. For companies that monitor customer equipment, many do so to improve customer service (through more proactive operations) and generate new revenue by offering IoT-enhanced services at a premium. Sensor data from connected assets can also generate valuable performance data that will help improve new product designs.

Top 5 IoT solution selection criteria:

1. Ability to integrate with other systems
2. Simple to deploy
3. Organization/presentation of data
4. Experienced partner
5. Cloud-based

IoT Solution Selection

When it came to selecting an IoT solution, our respondents indicated that integration, ease of deployment, and data presentation were critical factors. Slightly more than 72 percent of respondents listed "integration with other applications" as an important selection criterion. That's because IoT data on its own isn't that helpful; it has to be parsed, analyzed, and turned into actionable business information that can be used by existing applications. The value proposition of leveraging the IoT is far higher when data from the

"Our number one challenge [with IoT] is getting the data out due to low bandwidth environments. Without low-latency transmission, we cannot take full advantage of our IoT-enabled platform."

Mirza Chughtai, Miner Corp.

solution can be easily integrated with the company's field service software solution.

Users are also looking for solutions that are easy to deploy. In our survey, 66 percent of respondents listed "simple to deploy" as a top selection factor. Cloud-based infrastructure has played an important role in the adoption of IoT solutions for that reason.

Making The Most Of IoT Data

In order to make sense of the vast volumes of data that can be generated by these systems, some sort of filtering should occur before the data makes its way to a field service organization's (FSO's) business solutions. Hosted systems often offer this type of data aggregation and filtering. Because of the large amounts of data often associated with IoT, cloud systems also provide a lower cost of entry. Analyzing terabytes of data requires high performance computing solutions that most FSOs simply can't afford or don't know how (or have the bandwidth) to manage and maintain.

Keep in mind that to have success with IoT, you need to seek the appropriate connectivity for the transfer of data. "Our number-one challenge [with IoT] is getting the data out due to low bandwidth environments. Without low-latency transmission, we cannot take full advantage of our IoT-enabled platform," says Mirza Chughtai, CIO, Miner Corp.

41%

are currently using IoT solutions.

47%

are currently evaluating IoT solutions for future use.

Organizations also want solutions that present the IoT data in a way that is easy to view and understand. Sixty-three percent of respondents listed "organization/presentation of data being collected" as an important factor. Companies can be quickly overwhelmed by the sheer amount of the data that can be generated by remote equipment (depending on how it is configured).

With analytics capabilities operating in the background — provided by a cloud-based infrastructure partner or a dedicated IoT solution — much of the heavy lifting can be outsourced and the data viewed through a dashboard or similar interface.

The IoT will continue to have an increased presence in field service and in many markets is likely to become an important competitive differentiator. It has been fascinating to see how service organizations have quickly evolved from turning wrenches to turning connected equipment data into an important part of their operations.

A Look Ahead: Field Service Trends To Watch In 2017

As we move into 2017, the field service industry is entering an exciting new era marked by innovations, both in new technology and in new approaches to customer service. Mobile technology is just the tip of the iceberg when it comes to field service advancements. We're seeing the convergence of a number of different (often disparate) solutions that, when combined, could revolutionize service.

Based on the survey data, anecdotal contributions from the executives we spoke to for this report, and the industry developments we've been covering all year, we've put together a short list of some of the important field service trends that are likely to affect your business in the coming years.

How Technology Can Help Address Field Technician Shortages

In many industries, retiring baby boomers may decimate the existing field force, both in sheer numbers and in institutional knowledge. It will be difficult (and in many industries impossible) to replace all of those technicians with new employees who are able to address customer needs with the same level of skill or knowledge.

That's why many service companies are investing in knowledge management solutions to help automate this process, create data repositories for both customer information and repair tips, and have begun using social media-style tools to help technicians collaborate.

Asked what their top objectives were for their field mobility solutions, respondents ranked "gathering data to help knowledge management and company-wide decision-making" as their third highest priority. It was also the number-two response when it came to the biggest challenges service companies face.

Nearly half of respondents with a field mobility solution are using knowledge management functionality. The Internet of Things (IoT) may also help address this technician shortage by reducing the number of issues that require a truck roll, while augmented reality and video collaboration can allow veteran technicians to support new employees by remotely providing guidance from a central location.

Having modern, mobile technology can also help with recruiting and retaining new employees. "Attracting and retaining talent is our main priority," says James Mylett, senior vice president of service at Comfort Systems USA. "We continue to invest in building our service business here, and with the growth we're enjoying comes a need for additional talent. Where optimization fits in is maximizing the productivity of our workforce while also making the work experience more engaging for our folks."

Mobility Remains A Major Focus

Mobile devices were at the top of the list when it came to technology areas that respondents plan to research or consider in 2017. While it could almost be considered an entrenched technology at this point, the mobile hardware space is constantly shifting. As new features emerge and lower-cost devices hit the market, field service companies have been willing to replace their hardware at a much faster pace, shifting from rugged handhelds to laptops and then to tablets or smartphones.

This accelerating turnover, combined with the wide variety of form factors and operating systems, is going to make deployment and support even more complex. According to Tom Raffalksi, manager of safety, standards, and regulatory compliance at Southwest Airlines, examining similar deployments helped his company successfully navigate a large nationwide iPad deployment.

"We're interested in hardware trends and use cases in our own and other industries," Raffalski says. "Learning from others often helps speed up our time to market. As the last major carrier to deploy iPads, our deployment was faster than any other based on lessons learned from others."

Self-Dispatching Service

For Rich Clark, vice president of field operations at GOJO Industries, the focus is on technologies that can be integrated, so that field technicians can provide insight from the field, which can be turned into data that provides value across the organization. "We want to make it easier for our mobile service employee [field service rep] to quickly and accurately capture the right information and send/

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"We want to make it easier for our mobile service employee [field service rep] to quickly and accurately capture the right information and send/share it in formats that meet the customer/end-user needs."

Rich Clark, GOJO Industries

share it in formats that meet the customer/end-user needs, while also building on the collection of information needed to make fact-based decisions about the business via business intelligence and analytics," Clark says.

Eventually, these processes can be streamlined to the point that the customer is communicating their needs directly to the field technician. At Miner Corp., the company sees a future where connected assets can communicate a maintenance need via the Internet of Things to a central field service management solution. Machine learning or artificial intelligence systems could be developed to analyze the service information and intelligently issue a work order to the most qualified or closest technician.

"We are looking at the ability to introduce e-commerce into the field service experience where the client portal can dispatch service without the need for a dispatcher," says Mirza Chughtai, CIO at Miner Corp. The technology to create this type of "dispatchless" system exists today, although very few companies have all of the necessary solutions implemented.

Mylett also sees an increased focus on improving working conditions for field technicians. "I'm seeing more and more best practice sharing around worker safety today than ever before," Mylett says. "That's a major step in the right direction for the service industry. There isn't another topic that gets more of my attention than safety, and the trend toward placing even greater attention on getting people home safely to their families each night is encouraging."

Safety has been a key component of fleet management deployments. Most companies have found that using these types of GPS-based systems can provide a lifeline for field technicians who work in remote locations under dangerous conditions, (such as utility linemen or oil field workers) and can help fleet operators get a handle on poor driving behaviors through retraining.

Connected Assets Guide Service

Our survey found that more than 40 percent of respondents already have machine to machine (M2M) or Internet of Things (IoT) solutions in place, and another 47 percent plan to evaluate them in the future. Connecting assets to the network not only enables proactive service models, but it also helps service companies reduce the cost of their operations and increase asset uptime. In addition, the IoT can generate valuable product data for engineering departments.

To support this expansion of "smart" assets and equipment, we will likely see broader adoption of cloud-based solutions and Big Data/business analytics. There will also be an accompanying demand for low-latency, low-power wireless technology to enable the communication necessary for all of these connected devices.

A New Era Of Field Service

Exactly how each of these technologies will affect service delivery will vary by market, but our overall impression is that field service is in the early stages of a fascinating evolution that will present new challenges and opportunities to organizations that are willing to make the investment in mobility and other supporting technologies.

Investing In Next-Generation Field Mobility Solutions

The next wave of field mobility investment may look a lot like previous cycles, as many companies are focused on accelerating their hardware refresh cycles. By far, the area of future interest at the top of respondents' research/consideration lists for 2017 was mobile devices, with 65.61 percent of respondents indicating that investing in new mobile hardware was top of mind.

The mobile computer space is highly dynamic, and it has been challenging for enterprises to keep pace with new features and functionality as they become available. In an industry where typical device cycles historically ranged from five to ten years, the deployment of consumer-style devices and the need for hardware to support new software features have made device upgrades more frequent.

These upgrades are often driven by software requirements or the emergence of new hardware capabilities. "[We are] happy with our mobile device selection, but we are not married to it," says Rich Clark, vice president of field operations at GOJO Industries. "If better technology comes along, we'll switch." This illustrates that today's field service organizations are continually keeping an eye on new introductions to evaluate the benefit of new features and functionality, rather than waiting for device end of life or failures.

Top 5 areas of interest/ next investment:

1. New mobile devices
2. Mobile security
3. Field service software
4. IoT
5. Asset management

Mobile Security Is Crucial

Mobile security was the number two area of research/future investment, cited by 38.22 percent of respondents because mobility has introduced new security threats into the enterprise. In line-of-business applications like field service, IT security was traditionally more a question of physically securing the hardware and making sure employees didn't lose their devices. As the capabilities of the hardware have advanced and more companies rely on hosted or cloud-based solutions along with wireless communication, the security vulnerabilities have increased.

In addition to the hardware becoming more portable and likely to be lost or stolen, the mobile device represents a pathway behind the firewall that can be exploited by hackers to either access sensitive data or hijack the network or servers to launch denial of service or other types of attacks. With some very public and high-attention data leaks, protecting mobile data is top of mind for most companies with a mobile workforce.

Emerging Technologies Make Their Way In Field Service

Beyond the major focus on new mobile devices and mobile security, our survey respondents plan to look at a wide variety of emerging technologies for their field mobility objectives. This makes sense as we see a greater interest from today's field service organizations in moving beyond the basic functionality that today's field technologies offer and looking for ways to leverage more up-and-coming solutions to truly advance their business.

After new mobile devices and mobile security, areas of interest/next investment that tied for third place were field service software, asset management, and M2M/IoT solutions, all polling at roughly 25 percent.

"We are looking for augmented reality software for training purposes."

Tom Raffalski, Southwest Airlines

Video collaboration is also under consideration by 23.57 percent of survey respondents, and while it ranked lower in the survey, the related technology of augmented reality has many respondents intrigued. Both of these technologies (along with wearable computing) are set to have a big impact on field service. The technologies help organizations easily share information to improve technician collaboration and training and can even help address the looming technician shortage that many industries face. Organizations have cited the role of video collaboration and augmented reality as a way to efficiently leverage the insight of aging/experienced technicians as they train newer techs. Rather than needing to pair an older tech with a newer tech, you can have one experienced tech in the back office training multiple new techs at a time by taking advantage of these solutions.

The Role Of Augmented Reality In Field Service

"Augmented reality is the most intriguing new technology for us mainly because of the real-time practical application of it today," says James Mylett, senior vice president of service at Comfort Systems USA. "As we build a technical support team for our field workforce, an augmented reality toolset would provide a greater level of differentiation in the employee experience."

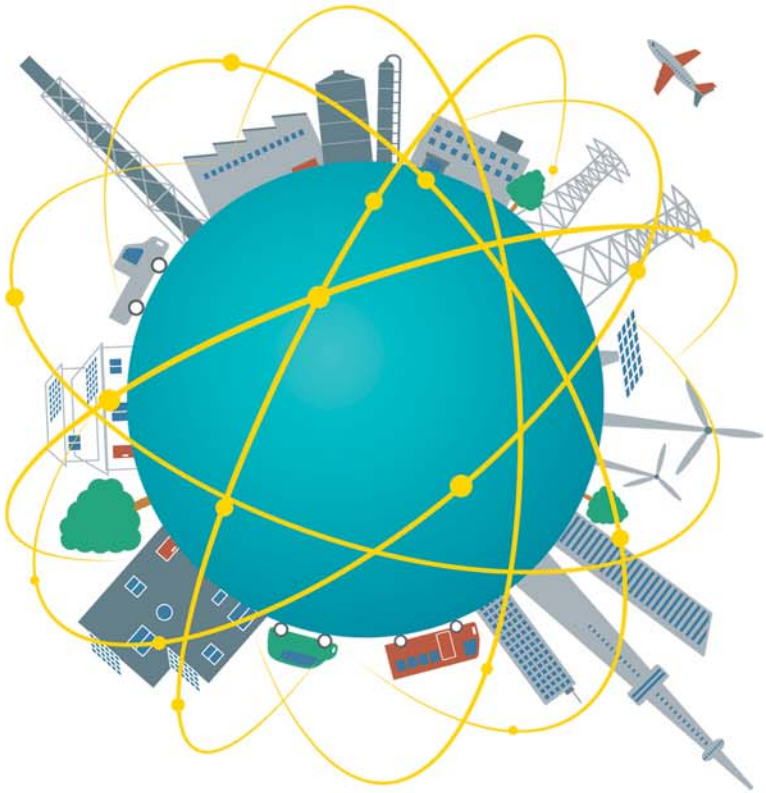
In the airline industry, augmented reality could play a big role in training employees. "We are looking for augmented reality software for training purposes," adds Tom Raffalski, manager of safety, standards, and regulatory compliance at Southwest Airlines. "Currently, regulations require a lot of hands-on training. We are hoping to find ways to simulate certain activities using iOS devices." As the mobile workforce becomes more and more comfortable with using technology, the idea of providing training via augmented reality and having that training be accepted and effective is far less a concern than it has been in the past (when many employees weren't yet comfortable with the use of mobile technology). As the aging workforce is replaced with younger techs, their comfort level will only increase the ease with which companies can embrace these new applications.

Artificial intelligence is playing a role for some organizations, too. "Miner is currently investing in further platform optimizations using artificial intelligence (AI) and machine learning," says Mirza Chughtai, CIO of Miner Corp.

The goal of augmented reality and artificial intelligence in field service is really to find new and more advanced ways to keep your technicians informed and connected. The more knowledge they have, the more informed and capable they are to do their jobs effectively and efficiently — which has the potential not only to improve their job satisfaction but also to improve your customers' experiences. "Knowledge sharing has huge leverage, and it's also a key care-about for our technicians. They want to have better connection to their peers and are looking for support in helping them solve customer problems. Our vision in this area is for our technicians to know that they are better equipped to solve their customers' service issues working at Comfort Systems than if they worked anywhere else in the industry. Knowledge sharing is a key pillar in making that happen," adds Mylett.

The Urgent Need for Managed Mobile Services in the Connected Enterprise

Mobile technology continues to rapidly change, and now the rapid emergence of the Internet of Things (IoT) adds millions of new device-types for companies to tightly manage - presenting organizations with exponential device, data and security management challenges.



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WORDS OF WISDOM

Firsthand Field Mobility Advice From Your Peers

Field mobility solutions have become easier to use and to deploy than ever, but at the same time the wide variety of hardware, software, platforms, and deployment models has made it much more challenging to find the right solution for any given organization's needs.

Service organizations have to do a better job up front of not only defining the business problems they want to solve but also defining how they want to deliver service. These twin directives show up in the survey data. Respondents are still more likely to list their top objective for a field mobility deployment as maximizing productivity, but improving the customer experience and customer satisfaction is a close second. Service is going through a number of fundamental shifts — from cost center to profit center, from reactive to proactive, from cost-focused to outcomes-focused — and any new technology deployment will need to be supplemented with a significant amount of training, business process changes, and even cultural changes in order to be successful.

These steps are also critical to obtaining financial support for field mobility projects. The top three barriers to technology investment cited in our survey were all centered on ROI: justification of the expenditure, limited resources, and building a business case. The first step in overcoming all of these challenges is being able to clearly outline your current business problems and match the right mix of technology and business process optimization to solve them.

But you don't have to take our word for it. We've asked a number of survey participants to share their own experiences, best practices, and advice based on their recent technology deployments and upgrades. Each of these executives has been through the process — in some cases multiple times — often involving very large deployments.

Have Clearly Defined Goals

First, stop looking at field service management as a single application issue. Successful optimization requires a holistic approach that involves software, hardware, and a new approach to customer service that puts outcomes first. "You need to look away from product options and look into a platform option," says Mirza Chughtai, CIO at Miner Corp. "Field service is not a point solution but a platform solution."

Make sure you clearly define the problem you are trying to solve with the field mobility solution. "I'm sure someone told me that when I was younger and I just didn't listen, but when it finally stuck, my ability to get big things done changed dramatically," says James Mylett, senior vice president of service at Comfort Systems USA. "All too often we wind up with really cool technology solutions that feel like they were built by engineers for engineers, as opposed to being a great solution for a clearly defined problem."

This also requires a careful evaluation of how you want to approach service moving forward. "Spend a lot of time defining what it is you are trying to do before evaluating solutions," adds Rich Clark, vice president of field operations at GOJO Industries. "Be very 'grounded' in who you want to be as a service provider. If you don't, you'll be distracted by a lot of cool stuff that your customers will never be willing to pay for."

Don't Underestimate The Need To Involve Stakeholders

Involve end users (technicians, dispatchers, customers, etc.) in the selection process. Having their input early on will improve your chances of a successful deployment, enthusiastic employee adoption, and a faster return on investment. Involving a cross section of your team (including IT, operations, sales, etc.) can also help ensure that you don't miss any important functionality or overlook potential integration obstacles.

"It's absolutely critical to involve the end user when evaluating and choosing hardware and applications," says Tom Raffalski, manager of safety, standards, and regulatory compliance at Southwest Airlines. "We ran a 10-month proof-of-concept [pilot], with our workforce weighing in heavily on

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WORDS OF WISDOM

"We're not satisfied with where we are today, and I think that's a healthy attitude when it comes to technology — it's a continual improvement process."

James Mylett, Comfort Systems USA

our hardware and software applications. Solutions cannot be determined solely by an IT department."

That involvement should be ongoing. Field staff can provide valuable suggestions for improvements or new features well after the initial deployment. Make sure you have a mechanism for responding to those suggestions and that you've partnered with a vendor that is flexible enough to respond to them.

Have metrics in place to determine the proposed solution will work and when it is ready for a full deployment. "Make better use of data in setting objective criteria for go/no-go decisions," Mylett says. "Technology projects can develop so much positive inertia that having objective criteria for deployment readiness can help avoid a disastrous launch."

You also have to be willing to select a solution that is good enough and make adjustments later. Some companies put off deploying or updating their field mobility solutions because they haven't yet found an exact fit for their application needs — and let the perfect be the enemy of the good.

"There are no perfect, all-in-one solutions," Clark says. "Unless you have the appetite [time and money] to build and support a customized solution, you'll need to compromise somewhere. When you compromise, don't do it at the expense of the customer! While you are looking for the 'close to ideal' solution [software, devices, etc.], try something. Accelerate your learning by getting your hands on something to experiment with. The investment will pay off."

That more experimental approach is increasingly critical as more service companies begin adopting advanced technologies. The sooner you can begin the journey of field mobility, the faster you'll accrue benefits and the better competitive position you will be in.

Understand That Field Mobility Is A Journey

Once you do have a new solution, be prepared for that solution to evolve. Hardware and software are changing too rapidly for field service companies to let their field service systems stagnate.

"We're not satisfied with where we are today, and I think that's a healthy attitude when it comes to technology — it's a continual improvement process," Mylett says. "Features which were surprising yesterday are expected today. Once we get past the installation of our mobile solution, the next big investment will be in the more customer-facing aspects, which include a portal and real-time tracking so our customers can see our technicians in route to their sites."

That's also reflected in our data. Many respondents plan to change their mobile device form factor during the next technology refresh, changing from handhelds or laptops to tablets, for instance. A quarter of respondents use a variety of mobile operating systems, and nearly as many aren't sure what platform they'll use after their next upgrade.

More and more companies are deploying cloud-based solutions, in part because they offer faster deployments and more hardware flexibility. Nearly half plan to evaluate the Internet of Things (IoT) functionality in the future. Others are considering other leading-edge solutions like augmented reality, video collaboration, wearables, and even artificial intelligence.

The important thing to know is what you want to accomplish and, more importantly, what your customers expect and need from you now and in the future. Technology can help you advance to the next level of profitability and service delivery only if you know where that level is in the first place.

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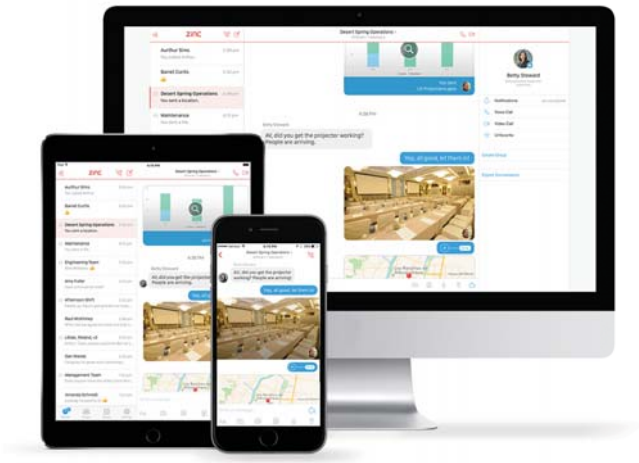

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