Field Technologies

OPTIMIZE FIELD WORKERS, SERVICE & ASSETS

EMBRACING MODERN FIELD SERVICE

2019: NAVIGATE EVER-INCREASING CUSTOMER DEMANDS IN AN EVOLVING SERVICE LANDSCAPE

Strategic Field Service Takes Hold

I've witnessed significant progress among field service organizations this year. If asked to summarize what's happening, I'd conclude that in 2018 field service has become more strategic. Born from the recognition that field service can be a profit center versus a cost center, companies have begun to realize that being more intentional about how they're delivering field service can truly transform their business. You'll see this recognition echoed in the pages of this issue as you read about what your peers are working toward, contending with, and investing in. This special issue takes a different format than our regular issues, providing you:

- A summary of insight from four of the leading analysts in this space
- The results of a comprehensive survey we completed in October of field service organizations, asking for input on strategic initiatives, challenges, and areas of investment
- Anecdotal insight from some of our *Field Technologies* Editorial Board members, giving additional perspective on their companies' field service journeys

To me, when you look at the information in this issue, there are a few major themes that illustrate the increasingly strategic nature of field service. Here are three aspects of field service I've taken note of in 2018 that reflect the progress being made in the industry.

Consistent Customer Focus

If you think of customer experience as a buzzword, you need to realize it's more of a concept that isn't going anywhere — and one you need to be paying attention to if you aren't already. Throughout the many conversations I've had this year with field service leaders, customer experience is a major recurring theme and area of focus. Field service organizations have realized that aligning their businesses to deliver the sort of experiences their customers are seeking is the only true path to success, and therefore customer focus has become the foundation of their business transformation efforts. Many of the field service executives I've interviewed this year have pointed out the fact that they're no longer competing with other field service organizations, but rather with companies like Amazon and Uber that provide convenient, seamless experiences. As customer expectations become increasingly demanding, having a companywide focus on the customer experience is arguably the most critical step toward strategic field service.

True Digital Transformation Efforts

Another theme that shows how field service organizations have become more strategic is how they are embracing digital transformation. By digital transformation, I don't mean automating spreadsheets or paper forms — I mean truly embracing what modern technology can do for your business. Companies that are reaping the benefits of true digital transformation are taking the time to first address ineffective, inefficient, or inconsistent processes — to first transform the business itself, and then to layer on technologies that will enable automation, greater knowledge at the point of service, better visibility of field operations, and more informed customers. From mobile to scheduling and work orders to IoT and AR and many others, the caliber of the tools you have at your disposal today is significant. Companies that recognize the potential to be more strategic are taking advantage of these tools, and are doing so in a well-thought-out and intentional way.

The Quest For Company-Wide Cohesiveness

As companies recognize the need for and potential of field service becoming more strategic, they also recognize the need for field service to be better connected to the rest of the company. Field service leaders would historically say they felt kind of "on an island" and while some still battle with this, I think as field service becomes more recognized for the competitive differentiation it can provide, the function is largely becoming better integrated into the rest of the business. This means everything from how upper management views field service and sets initiatives to how technology is used to how field service technicians interact with other roles such as sales. For field service to reach its potential, it needs to be viewed as a significant and important part of the company versus an afterthought, and I think many organizations have achieved this goal.

I hope you find the insight in this issue valuable as you reflect on the progress your organization has made in 2018 and as you set your goals and initiatives for 2019.

Sarah Nicastro

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Analysts Weigh In On Where Field Service Is Headed In 2019

As we prepare for 2019, I've asked four of the leading industry analysts to join us and lend insights on what they see as the biggest challenges, opportunities, and areas to watch in field service. Each of these analysts have different areas of expertise, which helps to give you a well-rounded view of the industry. If you aren't already, I'd suggest following each of them on their own social media accounts and blogs because the content they are putting out regularly is very relevant.

The 3 Biggest Challenges Field Service Organizations Currently Face

I began by asking the analysts to identify the things field service organiations are currently up against that are proving most challenging. "The three biggest challenges field service organizations are facing today are continued rising customer expectations, a shrinking talent pool, and increased competition for both talent and customer share of wallet," says Aly Pinder Jr., program director, service innovation and connected products, IDC Manufacturing Insights. "These three challenges may not seem new, but what is a change is the convergence of all three, which has a compounding effect on the field service organization as they look to deliver increased value to customers, retain experienced workers or hire the next wave, and do all this while competitors eat away at their profits."

Tom Paquin, research analyst, service management at Aberdeen, also points to the competitive pressures in field service. "The number one challenge service organizations are grappling with is a low barrier of entry leading to increased competition," he says. "There's a pretty even split about how this competition manifests itself. For straight service firms, it's in the competition in quality of service, which is designed to be mitigated by knowledge and workforce management. For manufacturers and product providers, there's equal concern about the competition of quality of product, which adds an additional layer of complication. Beyond competition, organizations are also struggling with reduced margins due to operational hiccups, workforce constraints, and inefficiencies as well as regulatory challenges."

"There are still a lot of inefficiencies and information gaps inherent in field service workflows," says David Krebs, executive VP, enterprise mobility and connected devices, VDC Research. "Field service organizations are working to address the need for faster response to exceptional events, to increase the efficiency of deploying field workers, to improve field technician communication and collaboration in the field, and to improve service quality and customer loyalty."

As industry director of mobile and wireless for Frost & Sullivan Jeanine Sterling mentions, the sheer volume of technology

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> **"Determining when and how to incorporate the never-ending stream of new technology into field service management is a major and ongoing challenge."**
>
> Jeanine Sterling, Frost & Sullivan

options today can be a debilitating challenge for field service organizations. "Determining when and how to incorporate the never-ending stream of new technology into field service management is a major and ongoing challenge," she says. "Beyond that, heightened customer expectations are both a challenge and a transformational trend. The industry is also smack in the middle of trying to anticipate and shape the changing profile of the field service technician. So much has changed in the industry and with the role, and organizations are working to adjust."

What Was Most Interesting About Field Service In 2018?

I'm always curious to ask analysts what they think is the most interesting thing they've uncovered that year. Krebs was most intrigued by the progress made in 2018 in wearable technology for the service technician. "We are very interested in wearable technology for the service technician and its ability to address remote assist and worker safety and improve key performance metrics. The benefits of hands-free operations while still having access to critical asset and customer information hold significant value. I would say we are still mired in the pilot cycle, but encouraged by the pace of technology development and engagement by key software vendors."

Two of the vendors pointed to progress with AR (augmented reality) as the most interesting advancement in 2018. "The changing perceptions on AR was most interesting to me in 2018," says Paquin. "I love AR and have been on board with it on the consumer side for the better part of a decade. What's so interesting is seeing the shift in perspective of AR applications from the main stage to behind-the-scenes for field service. AR used to be
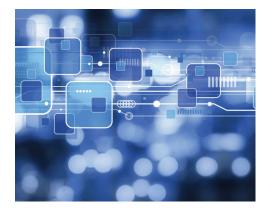
a flashy, consumer side show — all sizzle and no steak — but now when organizations see success with AR, they are seeing it on the operational side. That shift tells me that AR is moving from gimmick to powerful tool. I'd imagine we're closer to the point of AR saturation than you'd initially think."

Sterling agrees that AR is gaining traction. "I've been pleasantly surprised in 2018 to see AR start to gain some real traction in terms of vendor partnerships and planning," she says. "This is a cutting-edge technology that has been talked about quite a bit but has faced a slow uptake by stakeholders. While AR is definitely a work in progress, I think the progress in 2018 was interesting and we expect to see real-use cases in 2019."

The most interesting data point that stuck out for Pinder is the disconnect between the excitement of IoT and the actual adoption based on IDC's research. "The most interesting research we conducted this year was regarding service innovation, specifically for manufacturers. One data point that stuck out to me is that most manufacturers sampled are only connected to 25 percent or less of their equipment. This comes in contrast to the excitement of IoT that we all discuss on a frequent basis. However, this statistic doesn't discourage me. It does highlight the need to connect more assets, old and new; implement technologies to make sense of the IoT data; and build strategies around innovating based on that insight. The promise of IoT is there; we just need to be mindful that this is a journey and not the type of transformation that happens overnight," he says.

Your Biggest Opportunities In 2019

Here's where you'll want to start taking notes. I asked the analysts to share what they see as the

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Tom Paquin, Aberdeen

three biggest opportunities for field service organizations in 2019. "Here are the three key areas of focus I'd recommend: Unify your technology stack, focus on talent development, and start connecting the dots to emerging technologies," says Paquin. "Tech stack unification is key, to start. Organizations who indicate that they have, or are moving towards, a unified technology strategy see year-over-year revenue grow nearly 15 percent faster than those that don't. Talent development (and further — talent management) will be key to the future success of service organizations. With an average of 32 percent year-over-year service workforce turnover, organizations need to align technologies to bring in new technicians, and keep them in. There are a variety of strategies for how to manage this, and some disruptive plays at how service should be handled organizationally. I'd watch this space very closely over the next one to two years. Finally, the area of emerging technologies actually bubbles back up into the other two areas. Think about a unified, connected set of technologies — creating modularity and keeping the door open for new tech. Also, a broad spectrum of these emerging tech insights are centering around ways to optimize your workforce. The time to start laying the groundwork is now."

Pinder notes that turning data into outcomes will be a priority in 2019. "I see a number of big opportunities in 2019 for field service organizations, but three come to mind. First, I think the data to outcomes or action mindset will begin to bear fruit. Field service organizations have been using data to this point to get more efficient and solve current problems. I think in 2019, they will begin to use data, specifically IoT-connected product data, to innovate and deliver more customized products and services for customers," he says.

"Second, I think engagement and investment in the front-line team will separate leaders from the pack. As the available talent pool shrinks for new labor, it will become more imperative that field service organizations hold on to talent and attract new talent mimicking the B2C or technology world to a certain extent. And third, I believe customers will play a bigger role in their own service experiences. Customer portals will go beyond an FAQ tab to empower the customer to interact with the service organization, peers, or even the front-line technician. This added access will transform the relationship between the customer and service organization, adding visibility, value, and a bond that will be tougher to break by a competitor."

Sterling echoes Pinder's thoughts on increasing customer involvement and points to machine learning. "Online customer portals are a fascinating opportunity and should be a key investment priority for today's leading field service organizations. The benefits of these portals include reducing costs by decreasing the customer's dependence on customer service staff, solving problems more quickly through direct access to answers and advice, and even increasing revenues with the easy sale of more products and services via the portal," she says. "Third-party contractors also present an opportunity in 2019. Many field service businesses are hiring contract workers to augment their own field techs. The contracted workforce likes the independence, and the field service organization can leverage contractors to reduce overhead and enjoy more flexibility and scalability. The big "however," though, is that these third-party workers need the right kind of support. Finally, machine learning helps improve the quality and timeliness of field service work. The abundance of data collected in the field — about the customer, the tech,

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Aly Pinder Jr., IDC Manufacturing Insights

the work, the environment, etc. — is translated into impressive predictive field service capabilities. In our *2018 Mobile Business Solutions* survey, 76 percent of field service organizations reported being sold on the idea of leveraging machine learning and artificial intelligence to enable more proactive field service."

Krebs points to the need to address visibility as both the biggest challenge — and therefore biggest opportunity — for field service organizations leading into 2019. "Visibility, in particular the 'last mile' of field operations, needs to be addressed," he says. "According to our research, only one in five organizations have what they would describe as 'complete visibility' into their operations."

Technology's Role In Strategic Field Service

We know that technology alone can't help an organization be strategic, effective, and successful — but it is a great enabler of these things when used as part of a broader plan that includes alignment of people and processes towards the company's vision. When asked how technology is playing a role in strategic field service, Paquin points out that we are past the point of seismic shifts. "It's hard to pinpoint one technology and say, 'This is what's lighting the service world on fire'," he says. "Each technology takes service to a new level iteratively. We're way past the tectonic shifts of PCs, mobile computing, and even IoT, and now it's more about what systems optimize this strong base. I suppose on a broad (and painfully unsexy) level, data governance has been what I consider the unseen hero of service management. Service firms are just now beginning to make data work for them across disparate systems, but the more data that's collected, the bigger the picture. Of course, organizations need to figure out how to centralize, synthesize, and share those insights appropriately. Boring answer, but data is still king."

Pinder agrees that the real technology impact at this point is in learning how to best leverage the data that organizations now have. "Analytics had one of the biggest impacts on field service this year. Most manufacturers and service organizations didn't have an issue with capturing data; they had a problem making sense of it. In 2018, these organizations were able to create new products and services, engage better with the customer, customize experiences, and improve current products based on data and the analytics which supported recommendations," he says. "In 2019, I think collaborative tools and technologies will have the biggest impact on field service. This includes augmented and virtual reality, peer-to-peer or technician-to-customer social interactions, video tools, and chatbots, just to name a few. As we have all become accustomed to collaboration in our personal and white-collar work lives, I think 2019 will include the field into this way of connecting and communicating."

While mobility isn't new, Sterling points out that it continues to advance and offer new capabilities. "Mobilized field management solutions take the blinders off. They give field workers and their management the ability to receive and transmit work-related information and guidance in real time via the workers' smartphones, tablets, and even wearables. It is a category that just keeps being enhanced in terms of features and functions. In 2019, we expect to see more — and more timely — individual tech performance metrics and analyses pushed to the tech's mobile device. These will include reports on SLA compliance, time-to-first-fix, customer satisfaction, and other relevant performance areas," she says. ●

Navigating Today's Field Service Complexities

Field service has emerged as a key profit center in many sectors, but remains a difficult operation to effectively manage for a variety of reasons: uncertain demand, a widely dispersed workforce, seasonal fluctuations, and a shortage of qualified technicians.

In addition, customer expectations and demands have evolved and increased substantially over the past decade. Customers still want technicians to arrive at the right location, at the right time, and with the right parts, tools, and expertise to complete the job. But they are also looking for a better overall customer experience that reflects what they've been exposed to at Amazon, Uber, Netflix, and other online consumer services.

Namely, they want more immediate service on demand, they want visibility into technician arrival times and job status, and they want the ability to schedule service and pay for it online. They are also looking for greater value — either through lower costs or a service package/contract that relieves their own maintenance burden.

As such, the top challenges listed by our survey respondents reflect this more customer-centric service market. Meeting growing customer demands/expectations was listed as a top challenge by 54 percent of respondents, up from 46 percent last year, surpassing last year's number one challenge — increasing efficiency.

However, while ensuring optimal efficiency/productivity of mobile workers fell to the number two slot this year with 41 percent of respondents listing it as a top challenge (down from 53 percent), it is still top of mind for field service organizations (FSOs). Efficiency is still a key contributor when it comes to meeting those higher customer service expectations.

Employee engagement/training/incentivizing remains in the number three position at 35.5 percent, roughly the same percentage of respondents that listed it as a challenge last year. Employee/technician development issues have grown in importance as the pool of available technicians shrinks in most markets. Service companies have had to invest in novel ways to retain their technicians, as well as create programs to develop new technicians, either through partnerships with educational institutions, or by forming their own training organizations.

Improving first-time fix/eliminating repeat trips was up slightly, increasing to 31 percent of respondents compared to 30 percent last year. This is another customer-focused metric that has a direct impact on experience and expectations. If a problem can't be resolved in a single visit, customers experience longer periods of costly downtime, and service companies lose money through multiple, costly truck rolls.

The Top 5 Challenges

1 Customer demands (54%)

2 Optimizing efficiency (41%)

3 Employee engagement (35.5%)

4 Decreasing repeat trips (31%)

5 Lack of real-time visibility (26%)

A new entrant in the list of top five challenges this year is a lack of real-time visibility into field operations, cited as a problem by 26 percent of respondents. Again, real-time visibility is a key to meeting both customer and technician expectations by giving managers

and clients a way to see the status of work orders, identify the nearest technician to a customer site, and to implement new processes like dynamic scheduling/dispatching.

For our panel of field service experts, their top challenges are similar to the survey data, and also reflect the focus of their ongoing strategic initiatives. For example, Tim Spencer, senior vice president and general manager for service operations at BUNN, says his primary challenges are the implementation of the company's top three strategic initiatives: profitability improvement, improving the overall customer experience, and developing a pool of qualified technicians to address staffing shortages.

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>
> **John Quail, Husky Injection Molding Systems**

Finding technicians is also an issue for Gosiger. "We have an aging workforce, and there's a lack of available talent," says Roger O'Connor, vice president of product support. "We are also challenged with keeping up with an increasingly complex product line, and the availability of parts for existing, aging equipment."

Jack Rijnenberg, director of global customer service at Markem-Imaje, listed his top three challenges as service profitability, up-skilling engineers, and on-site response times. Because customers are demanding greater levels of service at a lower cost, profitability is a growing problem, particularly in industries where technicians are servicing commodity products or older equipment.

Ryan Snellings, global vice president for customer operations at Luminex, lists automation as a key challenge, as well as his shift from healthcare company Fresenius Kabi to a biotechnology company — an experience increasingly familiar to field service execu-

tives in a highly competitive hiring market. "I'm learning a new business that is much different from where I have spent much of my career," Snelling says. He also adds that "scalability is a huge challenge as well, given that we are a growth company."

For Husky Injection Molding Systems, hiring and training technicians on pace with the company's growth has proven to be difficult, according to John Quail, general manager for customer success, Americas. However, his biggest challenge is in selling service as a profit center internally. "My biggest challenge is building the vision, business case, and convincing executive leadership to invest in services versus traditional product development or factory investments," he says. "Another big challenge is scaling and deploying connected, performance-based service contracts."

Staffing was the top challenge for Roy Dockery, vice president of customer care at Swisslog Healthcare. "Retention of employees due to travel requirements and on-call responsibility for field service in the healthcare space are our biggest challenges," he says. Other challenges include process adherence regarding documentation, reporting and time entry, and inventory control for remote storage locations and trunk stock.

While competing for increasingly finicky customers is not easy, FSOs are working diligently to address these challenges and are investing in the technology and process changes to succeed. That is reflected in the data we gathered on strategic initiatives (see page 16), where survey respondents indicated they were prioritizing improving customer experience/satisfaction, reducing operation costs/increasing efficiency, using data more effectively to enable companywide decision-making, and migrating from break-fix to contract-based operations models.

These are precisely the types of projects that can help FSOs improve the customer experience while also addressing concerns about profitability by increasing revenues and tamping down costs. Based on the input from our panel of experts and the survey data, there is also a lot of work being done to head off what could be a staffing crisis when it comes to field technicians and engineers.

The use of advanced field service mobility software, mobile computers, and other technologies are also helping these FSOs tackle their first-time fix rates and real-time visibility issues by providing better access to data and technician location/status. ●

The Leading Field Service Strategic Initiatives

The field service market is more competitive, more dynamic, and under more pressure to meet increasing customer demands than ever before. As a result, field service organizations (FSOs) are prioritizing strategic initiatives that can help them remain relevant and competitive moving forward.

The top five strategic initiatives reported by the survey respondents this year include some important changes compared to last year's data.

First, the number-one and number-two items have switched positions, with improving the customer experience/satisfaction now sitting at number one at 76.3 percent (up from 71.8 percent in the previous survey), and reducing operation costs/increasing efficiency dropping to second at 72 percent.

This shift reflects the transition that many companies have made from focusing on internal improvements that reduce costs or increase productivity, to more customer-facing initiatives that can generate new business and new revenue and improve customer loyalty and retention. In some cases, these customer-experience projects may even increase costs, but FSOs increasingly see the competitive value in creating a positive and memorable customer interaction.

Remaining in third place is increasing service revenue at 53.7 percent. Boosting revenue is important, but the groundwork around customer satisfaction and efficiency has to be completed before most FSOs can experience real top-line growth. By improving customer satisfaction, FSOs can gain new revenue from existing customers (because they return as customers or buy additional services), gain new referrals, and can better position themselves to attract new business. Efficiency can help drive revenue growth by supporting customer-service initiatives and also by making it possible to take on more business without adding staff or other resources. However, efficiency shouldn't come at the expense of good customer-service delivery.

Just over 45 percent of respondents are prioritizing the better use of data to enable companywide decision-making, up from 40 percent last year. Customer and asset data is rapidly emerging as valuable currency in the field service space, as FSOs use analytics to provide more predictive service, spot opportunities to better serve customers, create new service offerings, and identify operational bottlenecks. That will likely require an investment in the back-end analytics technology required to process the data, as well as improved data collection processes and technologies in the field.

The Top 5 Strategic Initiatives

1 Improving customer experience (76.3%)

2 Increasing efficiency (72%)

3 Increasing service revenue (53.7%)

4 Better utilization of data (45%)

5 Migrating work to contract-based (34%)

A new initiative in the top five is migrating service work from break-fix to contract-based, cited by 34 percent of respondents as a strategic goal. This relates directly to improvements in customer service or experience, as FSOs search for ways to make their workloads and revenue streams more predictable. This also reflects the continued shift from reactive service to more predictive or proactive service models that include ongoing maintenance and focus on equipment/customer uptime as a deliverable.

Improving Experiences
For Customers, Technicians

Our panel of experts is also looking ahead to their own key strategic initiatives for 2019 and, like the survey respondents, they are focused predominantly on customer experience and efficiency improvements. The majority of these field service leaders are also focused on workforce development, training, and recruitment as the increasing pace of retirements shrinks the pool of experienced technicians.

At Swisslog Healthcare, the company is focused on rolling out a comprehensive field service application to improve efficiency and reporting in 2019. "This will help us better understand our utilization rates and our service metrics that we use to measure service levels," says Roy Dockery, Swisslog's vice president of customer care. The company is also putting effort into recruiting, training, and retaining a next-generation workforce.

Finally, Swisslog Healthcare has launched a digital transformation initiative and will work to eliminate redundant, non-value-added processes or systems. "This will drive efficiency that also leads to employee satisfaction, by consolidating six systems into one application with multiple integrations," Dockery says.

Roger O'Connor, vice president of product support at Gosiger, a machine tool distributor, says that his company also plans to improve its hiring, onboarding, and training processes for employees, in addition to continuing its transition from a break-fix to outcome-based/ service contract model. The company also hopes to accelerate both of those initiatives by deploying an AR solution.

Husky Injection Molding Systems is targeting the digitalization of its back-office service activities in 2019, in addition to improving field service technician efficiency. "We're also developing a wider range of remote support capabilities, including predictive monitoring," says John Quail, general manager for customer success, Americas.

BUNN is working on a number of projects to improve both customer satisfaction and technician development. According to Tim Spencer, senior vice president and general manager for service operations, improving the overall customer experience will "help us keep what we have and be referenceable for more business. When it comes to technician staffing, everyone is competing for the same resources. We need to find a way to grow our own pool."

BUNN will also work toward profitability improvement next year. "That will help the business case for continued spend on growth and systems to expand revenues and improve the customer experience," Spencer says.

According to input from Jack Rijnenberg at Markem-Imaje, the company is preparing to create a central planning and help desk infrastructure. In addition, they plan to deploy a crowd service structure for service. "We want to leverage that structure to increase the customer experience by improving on-site response time and availability, improve service margins, and free up time for senior engineers to deploy our professional service strategy," Rijnenberg says.

In addition, the company will deploy the Core Systems planning tool as a key enabler to support the crowd service initiative.

Biotechnology company Luminex also has strategic initiatives that are very similar to what we found in

"[The digital transformation initiative] will drive efficiency that also leads to employee satisfaction, by consolidating six systems into one application with multiple integrations."

Roy Dockery, Swisslog Healthcare

our survey data, according to Ryan Snellings, global vice president of customer operations. "We are focused on building a scalable, global organization during a high-growth period without driving up costs and, more importantly, not causing a decline in the customer experience," Snellings says. "We are also moving from manual to automation across multiple field support functions in order to reduce costs as we grow and improve the experience both internally and externally."

Luminex is also putting resources into field service workforce development. "We are preparing senior FSEs [field service engineers] and/or supervisors for higher-level management responsibility in order to build bench strength and high retention levels/knowledge," he adds.

Mobility:
The Field Technician's Lifeline

Field service is an inherently mobile business activity, so it's not surprising that the vast majority of survey respondents are utilizing some form of mobile technology. According to the survey, 86 percent of respondents are currently using mobile devices.

The types of applications these field service organizations (FSOs) are running on their mobile devices can vary from basic email/messaging or work order management to more complex fleet management, knowledge management, and diagnostic tools. The rapid evolution of field service software has driven new investments in mobile hardware, because FSOs want to take advantage of the new features and functions available in these advanced platforms.

It's no surprise, then, that some companies are using multiple types of devices to address their varied and quickly changing business needs.

The largest single group of respondents (32 percent) is using a combination of mobile devices, which speaks to the complexity of these deployments and the varied application needs encountered by FSOs. The use of multiple devices was down slightly, however, from the 36 percent that reported a multidevice environment in 2017.

Beverage equipment company BUNN is typical of these types of heterogeneous deployments. Technicians use a mix of iPhones and iPads in its service division, and the company utilizes a field service management platform from GE Digital/ ServiceMax that works across all of those devices. BUNN has also been able to utilize its new augmented reality and other technologies on its mobile computers.

When we drill down into the data and look at specific types of devices, smartphones and handhelds are clearly the devices of choice for highly mobile technicians. A combined 46.6 percent of companies are using an iPhone, Android phone, or rugged smartphone/handheld. Approximately 16 percent are using a tablet (either consumer or rugged).

Smartphone manufacturers in every sector are increasingly targeting enterprise applications as high penetration in the consumer market has slowed sales growth. According to VDC Research data, the volume of smartphones deployed in line of business applications reached 34 million in 2016 and will grow to 42 million by 2020.

Rugged-device manufacturers have also increased their investments in adopting the Android platform and creating more touch-centric devices and interfaces. These emerging rugged and semirugged smartphone devices have expanded the opportunity for mobilizing manual workflows in field service and other markets.

Mobile Device Selection Criteria

When it comes to selection criteria, portability was a top factor for the largest group of respondents, at 45 percent. That's important, because not all mobile devices are highly portable. One reason why so many formerly laptop-based field service applications quickly transitioned to tablets over the past

The Top 5 Device Selection Criteria

1 Portability (45%)

2 Wireless Communication Capabilities (39%)

3 Operating System (31%)

4 Field Worker Familiarity (22%)

5 Ruggedness/Durability (20%)

According to VDC Research data, the volume of smartphones deployed in line of business applications reached 34 million in 2016 and will grow to 42 million by 2020.

decade has been that those laptops still required technicians to return to their vehicle or another location away from the point of activity in order to access or input data. Tablets were lighter, easier to carry, and much easier to handle on a work site.

At Gosiger, end-user requirements for better portability drove mobile device selection. The previous solution the company used (which relied on emailing Excel files) wasn't working well, in part because the technicians' laptops were not working well. Technicians wanted a way to view and complete work orders from their mobile phones.

The company chose its solution (IFS Field Service Management) based on its ability to provide the back office functions it needed and the mobile capabilities the technicians were clamoring for. Gosiger provided company-owned smartphones (both iOS and Android) to technicians based on their preferences. Because the interface was familiar, most of the training could be conducted remotely. The transition away from the laptops has saved time and made technicians more efficient.

Wireless communication capabilities was the next most popular selection criteria among respondents at 39 percent, followed by mobile device operating systems (31 percent). Increasingly, technicians need access to real-time data — not just immediate work order information, but also customer and equipment histories, as well as the ability to share information with other technicians, order parts, and provide real-time job status updates to ensure SLA compliance and keep customers up to date.

The question of which OS to utilize has become even more important as Microsoft ends support for its traditional mobile platforms (like Windows Embedded Handheld), and more end users turn to Android-based rugged devices for field service applications.

Other top selection criteria included field worker familiarity (22 percent), durability/ruggedness (20 percent), and ergonomics and cost (both at 19 percent). Field worker familiarity can have a significant effect on the success of a mobile deployment. This is especially true as more rugged device manufacturers adopt the Android platform, and field service applications take advantage of touch screen technology and more intuitive user interfaces. If field technicians are able to more quickly understand the device and the associated applications, training times and costs are reduced, the deployment can be completed more quickly, and it is easier for technicians to improve efficiency/productivity with a shorter learning curve. That boosts the ROI of the solution.

End-user satisfaction was high, with nearly 90 percent of respondents reporting that their workers were happy with the current mobile device fleet. ●

Field Service Management: The Foundation For Strategic Field Service

The field service software landscape has exploded with new offerings over the past several years, even as some of the major software vendors have consolidated. In part, that's because of the ready availability of so many point-solution apps for smartphones and tablets that can be rapidly developed and distributed by smaller startups. The availability of cloud-based solutions has also made software selection more complex.

The good news is that most of the field service organizations (FSOs) we surveyed are making good decisions about their software platforms: 84 percent of respondents currently using mobile workforce software are happy with their company's current solution.

However, while a majority of respondents — just over 65 percent — have armed their mobile workforce with mobile automation software (scheduling, routing, work order management, etc.), there is still room for improvement. The breakdown of FSOs with mobile automation software versus those without has remained stable since last year, although the mix of applications is beginning to change.

Among those with mobile software in place, the most common functionality includes service/work order management (76 percent), dispatch/work order assignment (67 percent), basic scheduling (61 percent), routing/navigation (52 percent), and parts/inventory management (49 percent). The latter is up by nearly 7 percentage points over last year, potentially indicating that parts logistics in the field (a challenging endeavor using manual processes) may be improving via the real-time visibility enabled by mobile computing.

Forty-eight percent of respondents are providing customer history access or knowledge management to their mobile employees. For FSOs that are focused on improving customer service or boosting their service level agreement (SLA) compliance, this type of feature can play an

important role. Customer history can help technicians improve on-site troubleshooting. That data can also be leveraged by the customer service or sales department to identify customers that may be due (or well past due) for an equipment upgrade based on the number of service issues they are experiencing.

Knowledge management is a more internally focused application, but by pulling together the information gathered by technicians during service calls, FSOs can improve first-time fix rates by giving technicians access to best practices and troubleshooting information that lead to faster diagnosis and better repairs.

Communication features filled out the rest of the list of most common functionality, with the ability to communicate urgent work 43 percent, tech-to-tech communication at 36 percent, and dynamic scheduling at 34 percent. Tech-to-tech communication is another important feature for companies that want to improve outcomes by allowing technicians to assist each other on the fly, but the prevalence of that feature was actually down from last year (when it was listed by 44 percent of respondents). Mobile device manufacturers and some software vendors have recently introduced new solutions to make this easier (like push-to-talk features on handheld devices or social media-style tools in software), which could increase adoption.

Despite an increased focus on improving the customer experience, the software functions that enable this are still not widely utilized. Contract/warranty management and SLA management were only in place with 25 percent of respondents (down from 32 percent last year), while customer experience management is used by just 15 percent of companies. While more than 76 percent of respondents ranked improving the customer experience as a top initiative, clearly there is more work to be done when it comes to leveraging technology to achieve that goal.

The Top 3 Software Selection Criteria

1 Ability to integrate with back office systems

2 Ability to work untethered or without connectivity

3 Ease of use or having the software mapped to an existing workflow

When asked why they selected a cloud-based solution, 41 percent of respondents cited faster deployment as a primary driver, followed by less strain on the IT department (22 percent), device-agnostic capabilities (20 percent), and lower up-front costs (17 percent).

Field Service Takes To The Cloud

Highly mobile applications are a good fit for cloud environments, and that is strongly reflected in our survey results. Cloud-based solutions continue to increase their dominance in the mobile and field service space, with 61 percent of respondents reporting their current software solution is based in the cloud. That's up from 54 percent last year and 47 percent the prior year.

Cloud-based solutions can reduce support costs, make it easier to deploy and update software without bringing devices in from the field, and make it easier to add new features or change hardware without bogging down operations.

Those benefits are important to FSOs. When asked why they selected a cloud-based solution, 41 percent of respondents cited faster deployment as a primary driver, followed by less strain on the IT department (22 percent), device-agnostic capabilities (20 percent), and lower up-front costs (17 percent).

Regardless of whether the solution is based in the cloud or running in the company's data center, FSOs are looking for field service software that is easy to incorporate into their existing IT infrastructure and that is easy to use.

Top selection criteria for software included:

- The ability to integrate with back office systems — 45 percent
- The ability to work untethered or without connectivity — 39 percent
- Ease of use or having the software mapped to an existing workflow — 36 percent
- The ability to configure/customize the software — 27 percent

- Real-time versus batch communication — 28 percent
- Security — 27 percent

Software evaluation is a critical step in a field service mobility deployment and should go beyond the standard features/functions that vendors use to tout their products. At machine tool distributor Gosiger, for example, the company winnowed down its list of potential software candidates by looking not just at the capabilities of the solution, but also the cost and the financial stability of the vendors. The latter is an important consideration. If the provider files for bankruptcy or is acquired by another company, updates and support might cease, leaving the end user with little recourse beyond scrapping the system and starting over. Ultimately, Gosiger chose a vendor that not only provided the scheduling and mobile capabilities it needed, but that also integrated with its existing ERP solution.

ERP integration was also an important criterion for printing company Markem-Imaje, which needed a solution that would integrate easily with SAP. Beverage equipment manufacturer BUNN, meanwhile, has deployed a number of different solutions (including field service software and an IoT solution) that it was able to rebrand under its own name to distribute to third-party service providers and (in the case of the IoT product) its own customers.

Field service software should be able to meet your current application needs, but also provide the flexibility to help create a path forward for future improvements and initiatives. Fortunately, the current software market is large and varied enough to meet the needs of FSOs of every size. ●

48%

of respondents are providing customer history access or knowledge management to their mobile employees.

IoT Enables The Shift To Predictive Service

As field service organizations make the transition from break-fix operations to predictive, outcome-based service offerings, real-time visibility into equipment status and operations will be even more critical. Remote monitoring capabilities, particularly those that leverage IoT technology, can provide that visibility.

"We're using a homegrown IoT solution for proactive remote monitoring," says Swisslog's vice president of customer care Roy Dockery, echoing the experience of a rapidly growing segment of the field service market, which has embraced IoT.

BUNN has saved an average of nearly $300 per unit each year in overall cost of ownership through its technical support staff's use of IoT for troubleshooting.

According to the survey, 48 percent of respondents are already using IoT in their operations in some fashion. The largest group (29 percent) is using IoT to monitor equipment at customer sites, while 16 percent are using the technology to monitor equipment in their own facilities.

That's an increase compared to last year when 41 percent of respondents reported using IoT technology. Most of that growth occurred in the segment using IoT to monitor equipment at customer sites, which grew roughly 7 percentage points.

As was the case with augmented reality (AR) technology, ease of deployment was ranked as the top criteria for IoT system selection. Organization/presentation of the data being collected was another important factor, along with cloud-based capabilities. The majority of respondents with an IoT system in place (89 percent) were happy with their current solution.

In addition to remote monitoring, companies in the survey reported that they are using IoT connectivity for troubleshooting analysis, predictive diagnostics, and auditing purposes. IoT can also help service companies create new types of customer offerings. At Husky Injection Molding Systems, the company offers its own IoT solution to customers, ShotScope NX, which provides web-based monitoring to help improve product quality.

BUNN is using sensors in its beverage dispensing equipment and offers a solution called BUNNlink for specialty drink equipment customers. The system allows BUNN to more quickly help determine if a customer problem can be fixed over the phone or if it will be necessary to dispatch a technician.

Speaking to *Field Technologies Online* earlier this year, BUNN's senior vice president and general manager of service operations Tim Spencer said that the equipment fault codes trigger automatic notifications for both BUNN and the customer. "We often know before the customer does that their equipment is experiencing an issue that could cause or is currently causing performance issues," Spencer says.

Technical support staff use the IoT data for troubleshooting and, in some cases, remote repair. All of the company's call center agents can see the BUNNlink data during these calls, which has resulted in a much higher rate of resolutions over the phone.

The same information is transferred to the work order ticket if a technician has to be dispatched. Spencer estimates that BUNN has saved an average of nearly $300 per unit each year in overall cost of ownership. The solution also creates customer value and has improved the overall customer service experience.

Eventually, BUNN hopes to be able to push information like calibration data or drink recipe changes out to the equipment and to integrate the IoT data with other software systems. Potentially, equipment could automatically submit a work order on its own, without any human intervention. ●

Augmented Reality Gains Traction In Field Service

AR technology has taken off in consumer applications like gaming, but is still in the early stages of adoption when it comes to line-of-business solutions. However, deployments are increasing at a fairly rapid clip in field service as more companies leverage it for training, remote support, and to provide on-site access to repair instructions and schematics.

In fact, nearly 25 percent of our survey respondents are already using AR, a nearly 10-point increase compared to 2017. According to the survey data, 12 percent of respondents are already using AR to provide remote support from internal experts to field technicians, while another 9 percent are using the technology to enable experienced technicians to assist less-experienced techs in the field. In addition, just more than 5 percent are using AR to provide remote support to their customers.

When selecting a new AR solution, users were primarily concerned with ease of use, ease of deployment, and communication. Among users that have an AR system in place, all of the respondents were pleased with the performance of their current system.

Using either heads-up displays or the cameras and screens on their tablets or smartphones, technicians can overlay schematics, repair procedures, and other material on a live image of the equipment they are working on. Remote support staff can even use an AR feed to walk another technician (or even a customer) through a virtual repair procedure.

Our survey results mirror the implementation experience at BUNN, where the field service team is using an augmented reality solution from Help Lightning to onboard and train new technicians more quickly. According to the company, the AR solution has helped scale its training capacity during a period of rapid growth and has helped management provide more hands-on support to those new employees.

With more effective training (which includes not just repair procedures, but also systems training and exposure to the company culture), the company can deliver a more consistent service experience to customers. BUNN can also use AR to enable experienced technicians to mentor new hires without the cost of dispatching them to the field.

That engagement with the field staff has also helped validate the quality of repair work being done on-site. Coaches can tell if the technician has misdiagnosed an issue or if they are following correct procedures. Eventually, the AR solution will be integrated with a knowledge management initiative, so that technicians can scan a bar code on equipment to access AR-based manuals and repair tutorials.

Healthcare technology and medical solution provider Fresenius Kabi is also using AR to reduce costs. The company allows customers to log in to its Help Lightning solution when they call the company help line to assist with troubleshooting. The field team also leverages the technology for training and support.

Machine tool distributor Gosiger is also planning to deploy an AR solution and plans to leverage the technology to enable its other strategic initiatives. "We are experimenting with an AR solution, and we hope this will have a positive effect on both our initiatives to make improvements to our hiring, onboarding, and training processes, and as we continue our transition from a break-fix to an outcome-based service model," says Roger O'Connor, vice president of product support at Gosiger.

AR Adoption Levels

25% FSO already using augmented reality for field services

12% Internal experts providing remote support to field techs

9% Experienced techs assisting less-experienced techs in the field

5% FSO providing remote support to their customers

Field Service Investment Priorities For 2019

Our survey also took a look at what technologies field service organizations are considering for new investment in 2019. As was the case last year, mobile devices are top of mind for the largest group of respondents, with 44 percent planning to invest in new mobile hardware. That is down slightly from last year, when 50 percent of respondents planned new mobile investments.

Field service software was next on the list at 43 percent, a significant increase over last year's figure of 30 percent. Likewise, interest in mobile apps also increased from 32 percent to 42 percent. Approximately 30 percent of respon-

dents planned new research or investment in mobile security, while interest in fleet management/telematics solutions increased from 18 percent to 25 percent.

FSOs are being drawn to new software investments across the board, possibly as a result of rapidly advancing software products and new features/functions.

Interest in more leading-edge technologies was mixed, with both wearable technology (16 percent) and augmented reality (15 percent) down slightly from last year, when those figures stood at 18 percent and 16 percent, respectively.

Planned investment in the Internet of Things (IoT), however, has steadily increased, growing from 23 percent of respondents last year to nearly 26 percent this year.

When we interviewed field service leaders about their plans, they generally reflected the trends we saw in the survey data. At Swisslog Healthcare, Vice President of Customer Care Roy Dockery says the company plans to further expand its own investment in software. "We are planning a field service application deployment to complete the digitization of our support organizations," Dockery says. "This should improve efficiency, increase reporting capabilities, and reduce administrative labor."

"We are planning an upgrade of our IFS field service management software to the latest version," says Roger O'Connor, vice president of product support at Gosiger. "The drivers for that are improving integration with our enterprise resource planning (ERP) system, improving the mobile platform, and establishing a customer portal."

At BUNN, Senior Vice President and General Manager of Service Operations Tim Spencer says the company is considering new knowledge tools, technician development, and a better mobile app. "These are things that will improve technician utilization, reduce costs, and improve the customer experience," Spencer says.

Luminex also has new software in the queue, including an automated order management system which will reduce manual data entry and provide better EDI-type solutions for the company's customers. Husky Injection Molding Systems is planning for order desk dashboards, bots, and customer portal improvements that John Quail, general manager of customer success, Americas, says will "improve back office efficiency, improve customer response time, and increase the degree of customer self-service, supporting service after-market business growth."

Top 5 New Investment Considerations For 2019

1 New mobile hardware (44%)

2 Field service software (43%)

3 Mobile apps (42%)

4 Mobile security (30%)

5 Fleet management/ telematics solutions (25%)

> Last year, 28 percent of respondents were challenged by the unique needs of their organization and not being able to find a solution that fits just right. That figure fell to 21.5 percent this year as software vendors continue to release more flexible and customizable solutions.

Markem-Imaje is also planning for a new customer/partner portal and a knowledge base to help improve self service and the ease of doing business. They are also considering an augmented reality solution to help better support their field service teams.

Investment Barriers

However, investing in technologies to support strategic field service isn't without its challenges. According to our survey data, building a business case/cost justification was cited as a top barrier to investment by 46 percent of respondents. Getting buy-in from all necessary stakeholders was second on the list at roughly 40 percent.

Last year, respondents cited limited resources for evaluation, deployment, and support as the top barrier at 49 percent. This year, that issue fell to number three at just over 37 percent, perhaps indicating that budgets are beginning to loosen up as the economy improves.

Also tied for third place were concerns about training and employee adoption and keeping pace with the rate of technology change (both were cited by just over 37 percent of respondents). Thirty-two percent of respondents had an issue with competing company initiatives taking precedence over field service projects, while 24 percent were concerned with ensuring employee buy-in.

Last year, 28 percent of respondents were challenged by the unique needs of their organization and not being able to find a solution that fits just right. That figure fell to 21.5 percent this year as software vendors continue to release more flexible and customizable solutions.

For our field service experts, the cost to deploy a new solution continues to be a concern. "The cost to implement, and the ongoing cost of licenses, get pretty high as you add more and more technology cloud solutions," says Spencer at BUNN. "You quickly price yourself out of business unless you have bona fide hard-dollar savings. Soft-dollar savings are just not cutting it."

"Small company growth is exciting and a lot of fun to be a part of," adds Ryan Snellings, global vice president of customer operations at Luminex. "With that, however, comes highs and lows with revenue and cost so large investments can be hit or miss, oftentimes with a delay due to other competing projects."

For Jack Rijnenberg, director of customer service at Markem-Imaje, the decision to move forward can sometimes be hampered by the lack of alignment with other departments. "Everybody has similar requests and everybody comes with their own preferences and preferred vendors," he says. "All of the vendors promise the moon, and they all have their own pros and cons. The biggest delays are in this area. Should we delay and explore a complete solution that covers sales, service, marketing, etc.? Should we go with specialists in a certain area? What about the back integration in the ERP system?"

To help correct this issue, Rijnenberg says that the company has created a new department to enable its digital strategy that reports directly to the CEO.

Dockery, of Swisslog, says that the biggest barriers he sees are "competing priorities for funding, especially when paired against new sales and estimating tools that are expected to help generate revenue and increase our order turns."

Quail at Husky cites a similar problem with clearly articulating the needs and opportunities in services to executive and IT leadership, and Gosiger's O'Connor also listed solution selection and justification as a chief obstacle.

"There are so many opportunities today from improvements in FSM systems to augmented reality, learning management systems, etc.," O'Connor says. "All promise drastic improvement. What we have found is that there are improvements to be made, but they come at costs that are usually higher than expected. We are trying to get better at more accurately estimating the impact of these investments, in terms of direct cost and the indirect costs associated with internal resources, change management and business disruption." •

Valuable Perspective From Your Field Service Peers

All field service organizations (FSOs) face common challenges and are under similar pressure to become more proactive, to provide more customer-centric service offerings, and to continue to do so as efficiently as possible. We asked field service leaders to share their advice and the biggest lessons they've learned in their own quest to optimize their operations.

Process Before Technology

For Roy Dockery, vice president of customer care at Swisslog Healthcare, the most important part of any field service optimization project is to remember that technology alone can't solve the problems that most FSOs face. They also need to take a hard look at their processes and make sure they aren't just achieving bad outcomes faster.

The process changes have to come first. "I have learned that the key to the effective rollout of anything new is having the process developed beforehand," Dockery says. "Whenever possible, apply the process that you expect the technology to optimize or improve before the technology is available, so that users will clearly see and feel the benefit of the digital transformation. We often jump from manual processes to full digital automation without a step in between, which leads to dual change management approaches. That causes disruption and dissatisfaction among the people involved."

Addressing those process and technology updates requires a focus on change management, adds Jack Rijnenberg, director of global customer service at Markem-Imaje.

"Starting with mapping customer demand and which type of customer experience you would like to establish, process changes will follow, along with the use of new technologies and organizational change to support the processes," Rijnenberg says. "Investing time in change management will finally accelerate the deployment of your initiatives, tools, and processes. Take time to create the right sense of urgency across the organization before you start any change."

Selling The System

Creating that sense of urgency will require building excitement and enthusiasm about the new solution, up and down the organization. Ryan Snellings, global vice president of customer operations at Luminex, says that field service organizations need to be able to "sell" their story to the rest of business to create that level of buy-in for a new solution or technology.

"Having a strong ROI is great, but if you can't sell your story beyond just the numbers, it is hard to move the needle and get the organization on board," Snellings says. "Typically you're trying to sell a new tool to a level of management that isn't facing your day-to-day pain like you are, especially when it comes to manual processes and data entry. You can have the best ROI for a project within your company, but if you can't sell it with passion and enthusiasm, no one is going to go for it."

Even if you have calculated a strong ROI for your technology investment, you may face a steep curve when it comes to actually realizing those benefits, says Roger O'Connor, VP of product support at Gosiger. "Because there has been a lot of optimization already, improvements are even harder," O'Connor says. "When you make a major change, say replacing an FSM solution, the first step is getting the new system implemented and just getting to the point where you are as good as you were before the change. Building on that new platform to get the benefits you were after becomes secondary. I could have saved a lot of stress had I understood this a bit better."

With a new solution in place, Tim Spencer, senior vice president and general manager, service operations, at BUNN, warns other field service leaders that poor training processes can add a lot of unexpected costs to the hiring process. "I would exercise more caution regarding bringing on new techs," he says. "Our learning curve was too long, and the cost-versus-productivity gap hurt my margins. My advice would be to fix ramp-up and learning-curve issues before you spend the money on the new hire."

Finally, John Quail, general manager for customer success in the Americas at Husky Injection Molding Systems, encourages other organizations to experiment, try new approaches, and to not let the perfect be the enemy of the good. "Don't get caught up trying to build the perfect service mouse trap — you will waste time," he says. Try a few things, involve leading customers in your pilot programs, and grow the best ones from there." ●

> "You can have the best ROI for a project ... but if you can't sell it with passion and enthusiasm no one is going to go for it."
>
> **Ryan Snellings, Luminex**

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