Emerging Technologies in Field Service:

Driving Real Solutions and **Better Business Outcomes**

A Field Service USA 2019 Report







Introduction

For manufacturers and distributors, service has become an important competitive differentiator and a huge driver of both revenue and customer satisfaction.

This is causing a shift in business models as these companies make cultural, engagement, and technological advancements in selling not only products but outcomes.

Technology advancements like IoT, Big Data, augmented reality, machine learning, and AI have grown in their adoption among field service operations to drive better service results. But as service becomes central to business success, how well are these technologies delivering on their promise for a better industry?

In this 2019 Field Service USA report, we benchmark how the latest tools in field service are improving results for customers, service teams, and business as a whole. Featuring a dedicated, indepth analysis of four technology categories—IoT and Big Data; on-site augmented reality and wearables; AI and machine learning; and field service management (FSM) technologies these real-world data provide you with a complete picture of the cutting-edge technology performance landscape.





Insights from the study include:



74% of companies consider their technology infrastructure to be above average (53%) or superior (21%)

--they are leading the industry with technologies many competitors haven't adopted.



93% of companies have already incorporated IoT and data analysis capabilities

as a core part of their business.



79% of companies successfully connect their technicians while on the job

with seasoned service experts using augmented reality and wearables.



69% of companies have achieved a more efficient workflow

and 67% have enabled automated maintenance solutions through their implementation of AI and machine learning.



74% of respondents claim they lack real-time data

on availability, job status, resources, external impacts, or upselling opportunities as a result of their existing FSM technology.







About the Study

The study consists of **65% enterprise companies** (>\$500 million in annual revenue) and 35% mid-market companies (\$100 - \$500 million in annual revenue).

What is your annual revenue (company size)?



The majority of respondents are director level (38%) and above, including department heads (8%), VPs (21%), and C-Suite executives (12%). All other respondents (21%) are managers or team leaders.

What is your role?







PREDICT THEIR SERVICE NEEDS. BUILD TRUST. INTEGRATE FSM & IoT.



With Alliance Enterprise & IoT, predictive service becomes a reality.

Some of the world's best service companies are using Astea's integrated FSM and IoT solution to empower their customers. They've found that providing predictive service comes more from knowing what to do with the data you're collecting than it does from simply collecting it. That's the power of Astea's FSM platform, Alliance Enterprise.

No FSM platform delivers embedded business intelligence like Alliance Enterprise does. With Alliance, you'll do more than just collect data – you'll become a valued partner by enabling your customers to make better business decisions.

To take the first step towards offering the predictive service your customers demand, contact Astea today.

Prioritizing Technology Infrastructure

What are your technology goals for 2020?

"Enhancing the customer experience and reducing downtime is the prime focus. [Our] investments will be made into advancing the current technology possessed by our company."

Vice President, enterprise field service organization

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How would you describe the sophistication of your service, operations, data, and management technology infrastructure?



Technology infrastructure is an investment area most field service organizations prioritize to increase operational efficiencies and deliver better service value. But the results of the study suggest a key motivator behind those practical goals—achieving a competitive edge in a market increasingly driven by improved service experiences and customer success.

The vast majority of companies in the study consider the sophistication of their service, operations, data, and management technology infrastructure to be above average (53%)—they are ahead of most of their competitors—or superior (21%) they are leading the industry with additional enhanced technologies many competitors haven't adopted.

Nearly one-quarter of respondents consider their technology infrastructure to be only average—it is in line with those of their competitors. Four percent of respondents claim their technology infrastructure needs improvement—they are behind most of their competitors and it may be affecting their business. The following four analyses establish how key technologies are driving companies' progress in achieving a more competitive technology infrastructure. But as we will find, even with measurable service and customer experience benefits, most companies are not connecting technological capabilities with benefits to the bottom line.

I. Internet of Things (IoT) & Big Data



"We want to go beyond simplified data collection and initiate real-time data collection and processing. We will look to provide applications on the mobile phones of service agents to track, accumulate, and process all the data in every logical circumstance."

Vice President, enterprise field service organization

Respondents have identified Internet of Things (IoT) as the most appropriate technology to help them improve how they connect with data from the field, creating an optimized link with the organization and its operations. IoT-integrated systems allow them to implement seamless, intelligent connectivity with minimal efforts from agents in the field. Nearly all companies in the study (93%) already incorporate IoT and data analysis capabilities as a core part of their business. A majority of these companies have already made substantial progress with IoT and Big Data with multiple positive customer and business outcomes. Respondents believe it is realistic that by 2020, they will achieve IoT that connects all the systems and machinery of the organization along with internal and external services. Are Internet of Things (IoT) and data analysis technologies a core part of your business?





Today, 75% of companies have a holistic understanding of how their customers are using their equipment. Companies that implement live data transferring technologies can test and report readings across all of their substations, enhancing the way they observe and act upon live data.

loT and Big Data are transforming service for most companies. Sixtyfour percent have transitioned from a reactive to a 100% predictive or preemptive service model and 64% have become a more reliable and valuable provider in the eyes of their customers. Companies share an array of capabilities for improving their reliability, incorporating live predictions on weather, humidity, and even rush-hour traffic conditions. Other companies are integrating predictive capabilities with products themselves, fitting them with beacons that provide automated service requests and notify service teams in cases of potential damage.

How would you describe your progress leveraging IoT and Big Data to provide better service and both customer and business outcomes? Choose all that apply.









What are your technology goals for 2020?

"[They are] external part recognizing products that will only function if an existing part is replaced with an original one. This is a safety measure to deliver the best service from our products."

Team Leader, enterprise field service organization

Data from these technologies are driving improvements and potential value opportunities for these companies in other areas of business; 70% of companies are empowering marketers and sales reps with the insights these technologies provide. Over half (57%) are using this data to get ideas for additional products and services to sell to customers. Still, less than half (45%) have connected these technologies to direct improvements to the bottom line. While respondents highlight measured successes in terms of leveraging IoT and Big Data investments to improve service, few credit those capabilities with driving additional revenue.

Instead, companies' greatest successes are in improving customer experiences (59%) and reducing costs (53%). In each case, over one-third of companies are also making progress in these areas—37% and 35% respectively.

Please rate the following KPIs in terms of how your IoT and Big Data investments have contributed to their success.





For five of the six remaining KPIs, nearly half of organizations are successful in terms of how their IoT and Big Data investments contribute. This includes competitive value (47%), training & development (46%), growth opportunities (44%), improved FSM capabilities (41%), and first-time fix rates (41%). Most of the remaining companies are making progress in each of these areas. Only 38% of companies are successfully leveraging IoT and Big Data investments for additional revenue (38%), indicating the technologies are more operational and service-related in their applications, in some cases without perceived contributions to the bottom line. However, nearly half (45%) claim they are making progress towards realizing success in this area. As we will find, IoT has become a central technology asset for connecting other service-related technology investments. Next, we'll explore how augmented reality and wearable technologies are improving technician training, service results, and knowledge management through connectivity with organizational assets while in the field.

II. Augmented Reality & Wearables



What are your technology goals for 2020?

"For our field service agents, we would like to use wearable tracking devices that will allow us to collect data on the go."

Director, enterprise field service organization

"[Our technology goals include] augmented reality systems that allow us to easily plan for and produce new products with precise measurements and minimum wastage."

Director, mid-market field service organization

Augmented reality (AR) is a technology that allows field service teams to identify and virtually project their product implementations. Most field service organizations already use AR tools and AR-enabled wearables to record, analyze, and suggest the right mode of service to be undertaken in the field. By 2020, companies will expand on these technologies with traceability for data collection and product location, dedicated training functionalities for the next generation of employees, and features that support future product development.





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Fifty-five percent of companies use both augmented reality and wearables as a core part of how on-site technicians execute their jobs successfully.

Most remaining companies (29%) are using wearables but not augmented reality, which may include a range of already established industry technologies. Nine percent use only augmented reality, and only 7% of companies use neither. We're interested in how on-site technology is improving how technicians execute their jobs. Are you using either augmented reality or wearables as a core part of that experience?



Respondents note substantial progress leveraging augmented reality and/or wearables to improve service, customer outcomes, and business outcomes:



67% of companies have increased technicians' access to critical knowledge while in the field using augmented reality and wearables.

For example, several respondents suggest virtual personal assistants (VPAs) will be a new addition to their field service teams as part of better service and training initiatives. These technologies are allowing 54% of companies to expand resources for their technicians over time.



79% of companies successfully connect their technicians while on the job with seasoned service experts using augmented reality and wearables.



56% have reduced the amount of time it takes technicians to complete certain tasks using augmented reality.







Meanwhile, over half of companies see no improvements to technicians' abilities to take on a greater variety of job types (55%) or develop greater specialization (58%) as a direct result of these technologies, suggesting service teams predominantly use AR to optimize existing service capabilities.

As indicated previously, fewer companies connect parts of their technology infrastructure to the bottom line (only 45% see a direct connection with augmented reality and/ or wearables) but highlight multiple service, customer, and business benefits as direct contributions from their use of the technologies.

How would you describe your progress leveraging augmented reality and/or wearables to improve service and both customer and business outcomes? Choose all that apply. If none apply, choose 'N/A.'









"VR assistants [will] help us train all our personnel and even provide on-field assistance as and when required from remote sources."

Team Leader, enterprise field service organization

For example, respondents claim augmented reality and wearables investments have successfully contributed to better customer experiences (57%), cost reduction (50%), growth opportunities (48%), and improved field service management (FSM) capabilities (48%).

As indicated, fewer companies (41%) have found success leveraging these technologies for training and development. Fewer companies identify improvements to competitive value (37%) and to additional revenue (25%), but about half see progress in both areas.

While only 40% of companies have successfully leveraged augmented reality and wearables to improve first-time fix rates, 39% of companies are making progress. Twenty-one percent claim they have been unsuccessful in this area or the KPI does not apply.

In terms of functionality, wearable and AR devices can be integrated with both analytics and actionable technologies that drive efficiencies and improved service value. As we will find, that includes coordinating with machine learning and selfanalyzing software that provide detailed analyses of all the activity that needs to be carried out with the help of wearable and AR devices on the job site. Please rate the following KPIs in terms of how either or both of these on-site technology investments have contributed to their success.





III. Artificial Intelligence (AI) & Machine Learning

"Al-assisted customer engagement technology will assure us of efficient customer services. This technology will provide long-term customer engagement assistance to us."

Team Leader, enterprise field service organization

Al and machine learning can bring speed to analytics and execution based on insights derived from field data. Some respondents claim the introduction of machine learning into the field service industry has been pivotal for growth, where companywide integration of these technologies is a top priority over the next two years.

Most companies (51%) use both AI and machine learning technologies. One-quarter of respondents use only AI, and nearly one-quarter (23%) only use machine learning. Only 1% of companies use neither.

Are AI and machine learning technologies a core part of your business?





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"Automated analytics that will help us manage our information in close to real-time is our technology goal for 2020."

Director, mid-market field service organization

Companies are successfully leveraging AI and machine learning to improve service, customer, and business outcomes with specific areas of progress. For example, the vast majority of respondents (78%) can search through customer history and asset records more quickly as a result.

Most companies can achieve a more efficient workflow (69%) and implement automated maintenance solutions (67%), both of which directly impact service. For example, AI can integrate with AR solutions such as object identification cameras, which can read images, identify external objects, provide deeper insights into maintenance requirements, and improve the results of inprogress service visits.

How would you describe your progress leveraging AI and machine learning to improve service, customer, and business outcomes? Choose all that apply.





Al platforms may independently manage mobile field service teams using mobile phones and integrated apps. In each case, nearly half of respondents have already realized results in their forecasting and scheduling. Fortyeight percent have improved their maintenance forecasting, and 48% have optimized their scheduling solutions for maximum timeliness and efficiency. Once again, most companies have trouble connecting technology infrastructure to the bottom line. Only 42% of companies have connected AI and machine learning to direct improvements in this area.

As with IoT, AI and machine learning platforms can drive efficiencies and service results through their integration with other technologies. Products built with AI-driven 'smart parts' work with IoT to send direct messages to the service department in case of any problems—a system that reduces the downtime of service delivery. Other companies have technologies that amalgamate both AI and AR technologies in the pipeline for 2020.

Next, we'll explore how field service organizations can improve the connectivity of their FSM technologies with real-time data on availability, job status, resources, external impacts, and other opportunities in the field.

IV. Field Service Management (FSM) Technology



"Dynamic and conversational systems that process natural language faster and with greater accuracy is something we want to install in our CRM applications. Two years will be enough to do this."

Vice President, enterprise field service organization

While most companies (73%) find that their current FSM technology meets all of their field service management goals, over one-quarter of companies (27%) do not. In fact, only 46% of companies have successfully improved FSM capabilities—and while 44% are growing in this area, 10% have not.

Does your current FSM technology meet all of your field service management goals?





But while companies are not prioritizing FSM technology changes to the same degree as with other technologies, they identify multiple areas for improvement. Nearly threequarters (74%) claim they lack realtime data on availability, job status, resources, external impacts, or upselling opportunities. Similarly, few companies have been successful in reducing costs (38%), improving first-time fix rates (33%), and increasing revenue (31%) as a result of their FSM technology investments. These KPIs have the highest failure rates—16%, 19%, and 19%, respectively.

Over half of respondents claim real-time system access for technicians via mobile devices (56%) and status visibility of their workforces in the field (52%) need to improve. Similarly, 50% of companies need to enhance training and leadership development in terms of how they manage field service.

Fewer companies claim smarter pre-scheduling (47%), maintenance efficiency (45%), and tracking equipment history and configuration (44%) need to improve. Similarly, 30% struggle with route and scheduling optimization, and 20% struggle with allocating their technicians.

Thirty-eight percent of companies claim they need to improve how they leverage field service management to improve the bottom line. Only 6% claim their field service management does not require any improvements.

In which of the following areas does your field service management need improvements?







A slim majority of companies (51%) have been successful in improving customer experiences using their FSM technology investments. Nearly all remaining companies (48%) are making progress in this area.

Unlike other technology investments, FSM technologies are doing less to increase competitive value. Although nearly half of companies (49%) have been successful in achieving competitive value with their FSM technology investments, only 38% are making progress in this area. Thirteen percent claim they have been unsuccessful. Similarly, more companies are making progress with training and development (48%) than have been successful (45%).

Nearly half of companies (46%) are realizing growth opportunities as a result of their FSM technology investments. Although 41% are making progress in this area, 13% have been unsuccessful.

Please rate the following KPIs in terms of how your FSM technology investments have contributed to their success.









Conclusion

While field service organizations have not fully connected cutting-edge technology investments with revenue, their efforts to improve competitive value in service speak for themselves. Increasing customer success pays residual rewards in terms of customer loyalty and probable sales growth.

Field service organizations will build on these solutions to drive greater efficiencies and business value.

Building out the field service technologies of the future must start with foundational investments in networked technologies that support more specialized capabilities like these. As we have seen, most field service organizations are on their way to turning these next-generation ambitions into realities. When asked to share some of their own upcoming investments—beyond those in our analyses—3D printing and robotics arose as prominent winners:



According to respondents, **3D printing** will be a field solution to delays and costs associated with acquiring spare parts technicians can simply print the parts on site.



Automated field solutions may be able to calculate accurate dimensions to provide these solutions in real time using augmented reality, or even develop customized parts on demand.



As metal 3D printing solutions emerge, these technologies may take center stage on product development for some companies.





problem isn't resolved.

Field service teams

will use cloud-based device tracking systems that provide live performance analytics and robotic assistance.



Some organizations will invest in robotic drones or prosthetics that can analyze problems and make their own adjustments as well as carry out critical tasks in areas technicians find difficult to reach.



About the Authors



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