Field Service Scheduling and Routing

A Guide to Service Delivery Excellence

June 2008

Aberdeen *Group*
A Harte-Hanks Company

Executive Summary

In its simplest form, service involves the creation of a service work order either from notice of asset failure or performance drop directly from the serviceable asset or from the customer, followed by the effective scheduling of a field technician to get to customer sites so as to resolve the service issue and close out the work order. With 55% of service calls ultimately requiring a dispatch and the cost per dispatch rising 26% over the last two years, service organizations are faced with the balancing act of continuing to deliver faster, better service while actively controlling service-related costs.

Best-in-Class Performance

In a May 2008 research survey of 160 service professionals, Aberdeen benchmarked key service delivery performance criteria to distinguish Best-in-Class companies. These firms revealed the following performance results:

- 86% current performance in meeting promised response times

- 86% current service efficiency performance in first-time fix

- 9% decrease in mean time to repair over the last year

- 71% current performance in workforce utilization

Competitive Maturity Assessment

Survey results show that the firms enjoying Best-in-Class performance are:

- Two times as likely as all others to optimize service schedules in real-time

- Three times as likely as all others to provide their senior executives with on-demand visibility into service performance

- Nearly two times as likely as all others to use service performance data to continuously evaluate and adjust service plans and forecasts

- Nearly three times as likely as all others to leverage mobile field service applications to facilitate field-base data access for their mobile technicians

Required Actions

To achieve Best-in-Class performance, companies must:

- Move away from paper-based work order management

- Increase the frequency of scheduling runs

- Provide mobile workers with appropriate tools for work order management as well as access to service knowledge and resolution best practices

- Increase Service Level Agreement (SLA) and parts visibility to complete the service delivery equation

Research Benchmark

Aberdeen's Research Benchmarks provide an in-depth and comprehensive look into process, procedure, methodologies, and technologies with best practice identification and actionable recommendations

"Effective resource scheduling and management is extremely important. We are trying to convert our service offering from a cost center to a profit center and every penny saved spends just as well as a penny earned."

~ Field Service Coordinator
Large Global Communications and IT Company

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Benchmarking the Best-in-Class

Business Context

As service and manufacturing organizations evolve into overseers of asset uptime and quality so as to ensure higher levels of customer satisfaction, they continue to strive to ensure that they don't become lightning rods of criticism for the failure of products that they service. Therefore, these firms are walking the thin line of minimizing their visibility from a service disruption point of view but are increasing their reputation as a source of value. The evolution of the service industry also involves the added objective of fewer dispatches from a cost saving and 'green' perspective given current socioeconomic times. As such, Aberdeen's service research has revealed the increased use of remote monitoring and self-service tools so as to minimize the overall need for technician dispatch and the haunting $263 truck roll.
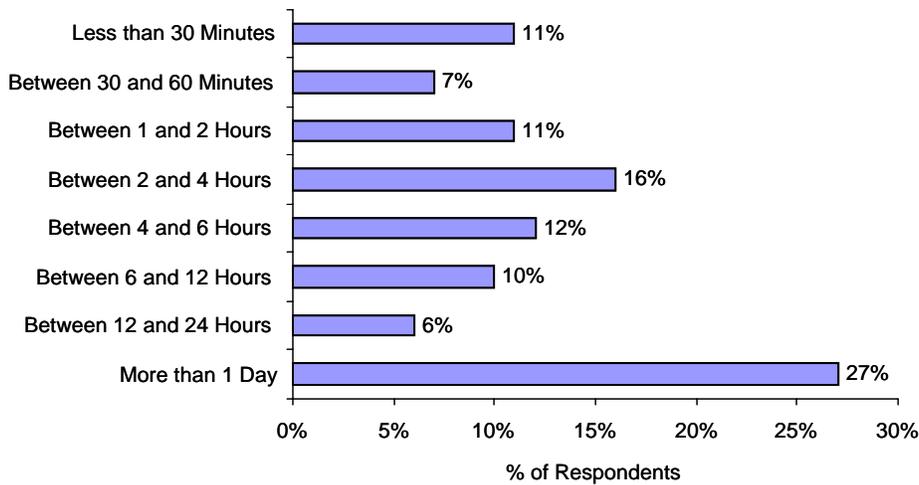
While these new avenues of dispatch-less service continue to gain traction, service and manufacturing firms have to continue to focus on the bread and butter of service delivery - the resolution of tickets from creation, assignment, and scheduling, through ultimate routing and work order closure. This is extremely vital as Aberdeen's survey of 160 service and manufacturing executives reveals that 55% of service calls still require a technician dispatch, whether it be for break / fix type work, or preventive maintenance or for replacement or installation variety of service. In fact, 40% of respondents indicate that more than 70% of service calls require a technician dispatch with only 5% indicating that all their calls are resolved without a single technician truck roll. With that and the reality of service organizations carrying an average portfolio of 200 technicians completing 3.7 jobs a day, the need to efficiently coordinate a large number of service resources to meet customer needs is a core requirement for success for today's service organization.

To make the efficient service delivery even more vital, customer expectations for speed and accuracy of service delivery are becoming even more acute. In short, customers want precise windows for when their service technicians are about to arrive and would prefer if these windows were sooner rather than later. For example, 41% of respondents indicate that customer expectations for response times have gone up over the last year with 55% indicating no change. Further analysis shows that these expectations are primarily for response within 12 hours, as indicated by 67% of respondents. Nearly 30% of firms indicate that their customers expect service response windows within two hours (Figure 1) - a window that is becoming increasingly prevalent in the service space.

Fast Facts

√ 55% of customer calls still require a service dispatch

√ 1.5 average number of follow-up dispatches required when issue not resolved on a first-time basis

√ 67% of customers expect service response within 12 hours

√ 86% success in meeting promised service response windows by Best-in-Class, compared to 67% for all other firms

√ 86% performance in first-time fix for leading service firms compared to 55% for all other firms

√ 17% increase in technician productivity for leading service organizations over the last year

Figure 1: Customer Expectations for Service Response

Response Time	% of Respondents
Less than 30 Minutes	11%
Between 30 and 60 Minutes	7%
Between 1 and 2 Hours	11%
Between 2 and 4 Hours	16%
Between 4 and 6 Hours	12%
Between 6 and 12 Hours	10%
Between 12 and 24 Hours	6%
More than 1 Day	27%

Source: Aberdeen Group, June 2008

"Effective service scheduling and resource management is critical to our ability to meet the response time requirements of each customer and to drive field technician productivity."

~ Manager, Service Strategy
Global Office Equipment
Manufacturer

Pressure from customers is leading to promises of quicker and shorter service responses, though promises still lag expectations. The knee jerk reaction to promise shorter response times can backfire if resources at the servicing firm are not in synch so as to meet promised times. In fact, responding firms indicate a 71% success rate in meeting these shorter response times, which is a surefire precursor to customer angst and dissatisfaction.

Therefore the need to align the people, parts, vehicles, and resources within the service delivery framework to ensure that the right technician is at the right place at the right time with the right part continues to be a pressing priority for service and manufacturing firms.

The Maturity Class Framework

Given the highlighted challenges, the measure of a Best-in-Class service organization from a service delivery perspective is not only determined by faster response times but also in the ability of the service organization to meet promised service windows while driving productivity, utilization, and efficiency in service. Utilization and efficiency as measured by overall productive time and first-time fix also enable the service firm to keep a close tab on costs while ensuring higher levels of customer satisfaction. These components therefore form the basis of Aberdeen's Best-in-Class Maturity framework.

Table 1: Top Performers Earn Best-in-Class Status

Definition of Maturity Class	Mean Class Performance
Best-in-Class: Top 20% of aggregate performance scorers	▪ 86% Current success rate in meeting promised response times ▪ 86% First-time fix ▪ 71% Workforce utilization ▪ 85% Workforce efficiency (average daily performance in calls completed / total calls assigned) ▪ 9% Decrease in mean time to repair over the last year
Industry Average: Middle 50% of aggregate performance scorers	▪ 71% Current success rate in meeting promised response times ▪ 63% First-time fix ▪ 59% Workforce utilization ▪ 65% Workforce efficiency (average daily performance in calls completed / total calls assigned) ▪ 6% Decrease in mean time to repair over the last year
Laggard: Bottom 30% of aggregate performance scorers	▪ 59% Current success rate in meeting promised response times ▪ 31% First-time fix ▪ 28% Workforce utilization ▪ 28% Workforce efficiency (average daily performance in calls completed / total calls assigned) ▪ 2% Increase in mean time to repair over the last year

Source: Aberdeen Group, June 2008

The Right Time and the Right Place

Visibility into field resources and effective scheduling ensures that technicians arrive when promised, whether it be a four hour window or a 35 minute emergency response window. Leading firms indicate an 86% success rate in meeting these response times, compared to a 67% success rate for all other firms. Despite response expectations becoming shorter over the last year, leading firms have indicated an 8% improvement in meeting promised times over that period of time. To view that metric from an operational point of view, it also indicates the ability of the service organization to accurately schedule the appropriate amount of service tickets given the availability of its resources. While a technician might have the ability to complete six jobs a day, real-time conditions from traffic to weather, to customer availability might dictate a more realistic four jobs a day. As such, visibility into field resources and accurate scheduling taking real-time considerations into account allows the service firm to not over extend itself with regards to resource usage and false promises. In this case, leading service organizations are excellent, reporting an 85% performance level in workforce efficiency as measured by the average proportion of jobs completed to jobs assigned.

Internally, a well-oiled field service dispatch, scheduling and routing machine drives productivity and utilization. These metrics go hand in hand as

increased utilization infers that the technician is spending less time sitting idle at home or on the road but is in fact "turning wrenches" at customer sites. In terms of workforce utilization, leading firms come in at approximately 71%, compared to 50% for all other firms. To put that into perspective, technicians at non-Best-in-Class firms are not on customer sites for nearly half their overall time - time that could be spent generating customer loyalty and revenue for the service organization. Increased time spent at customer sites is a major reason that leading firms have experienced a 17% jump in technician productivity over the last year compared to an 8% increase for all other firms.

The Right Technician with the Right Part

To look at productivity or service window accuracy in isolation is dangerous as it doesn't take into account the ability of the service organization to ultimately resolve the customer issue. Hence, the efficiency of job allocation and scheduling, that ultimately ensures that the appropriate technician is selected for a specific job based on skills, available tools, etc., is determined by first-time fix. For the end customer or asset operator, the technician showing up within a two hour window is great, but not so effective if that technician needs three to four visits to adequately resolve the problem and ensure that the asset is up and running. As such, leading firms indicate an 86% level of current first-time fix as compared to 55% for all other firms. The superior ability to get issues resolved on a first-visit basis has also enabled leading firms to experience a 9% decrease in mean time to repair (from order creation to final resolution) over the last year.

From an internal cost perspective, the 45% of jobs not resolved on a first-visit basis ultimately might require another dispatch and truck roll. In fact, Aberdeen's research reveals that for every issue not resolved on a first-visit basis, an average of 1.5 additional dispatches need to be made to ensure complete resolution. With the average cost of dispatch having risen nearly 26% over the last few years, the math doesn't look pretty from a service cost perspective.

The Best-in-Class PACE Model

Aberdeen's PACE framework is designed to highlight the key strategies and capabilities employed by Best-in-Class firms in support of their service operations and to alleviate market or internal pressures faced by their service organizations.

Aberdeen's survey found that the need to improve the combination of workforce productivity and utilization was the key pressure faced by service organizations to improve their field service scheduling and routing processes (Figure 2). This was the top pressure felt across all organizations, regardless of position in the maturity framework. This pressure stems from the combination of rising service-related costs and customer demand for faster, better service.

> "First visit resolution is one of the top three operational metrics that we track. We are working to add parts requirements to the scheduling algorithm and think this will have a big impact."
>
> ~ Field Operations Director
> Retail Technology and Services Provider

Figure 2: Pressures to Improve Service Delivery

Source: Aberdeen Group, June 2008
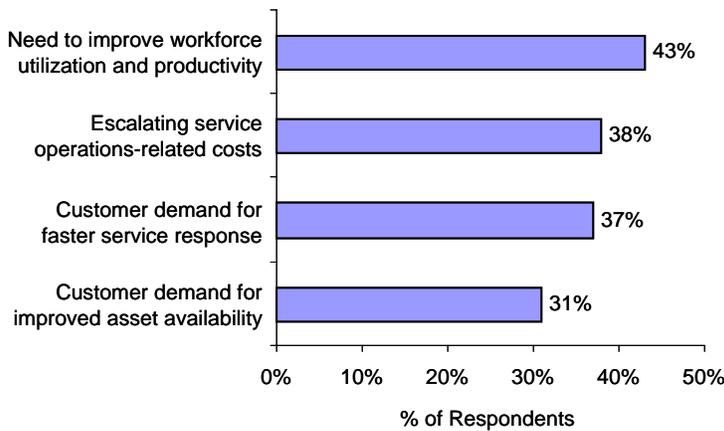
"Costs are a factor but more importantly is increasing customer satisfaction and loyalty. We have a good reputation for field services and post sales support but we are trying to do more with less and that means we have to be more efficient with what we have."

~ Field Service Coordinator Large Global Communications and IT Company

Comparing the ranking of the top pressures to scheduling research conducted by Aberdeen last year, cost has moved up in terms of absolute priority (from 3rd to 2nd). However, the percentage of respondents considering it to be a primary pressure has remained constant at approximately 38%, which is a little surprising given the significant rise in service resource costs over the last year.

Table 2: The Best-in-Class PACE Framework

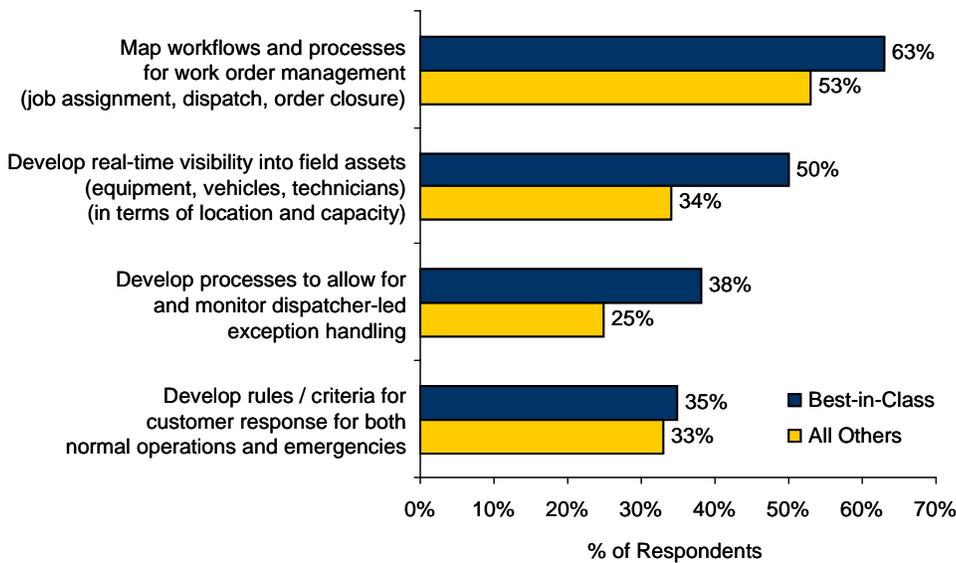| Pressures	Actions	Capabilities	Enablers
▪ Need to increase workforce utilization and productivity to meet customer expectations	▪ Map workflow and processes work order management - job assignment, dispatch, order closure ▪ Develop real-time visibility into field assets (equipment, vehicles, technicians) (in terms of location and capacity) ▪ Develop rules / criteria for customer response - for both normal operations as well as emergencies	▪ CSR / dispatcher takes service call and creates work order on a dispatch management system ▪ Service orders directly created by customer or through information from serviceable asset ▪ Dynamic scheduling (scheduling application continually assigns orders as they are recorded, dispatchers primarily used for exception handling) ▪ Service executive has on-demand visibility into service performance ▪ Service performance data used to evaluate efficacy of staffing and resource levels ▪ Service performance data used to consistently evaluate scheduling criteria	▪ Technician access / ability to: - Accept and close service orders - Update current status - Provide estimated time of arrival and completion - Customer / asset service history - Product schematics and resolution scenarios - Parts in truck or en-route stocking locations ▪ Customer access / ability to: - Create service tickets - Self-service scenarios - View technician / part status ▪ Applications in use: - Dynamic scheduling - mobile field service - intelligence / analytics - knowledge management - gps-enabled vehicle tracking

Source: Aberdeen Group, June 2008

Best-in-Class Strategies

As will be highlighted in Chapter 2, automation plays a key role in assisting service organizations alleviate productivity and cost pressures being faced in today's environment. As such, nearly a third of leading organizations consider the need to automate their field service processes as a strategic action in the next 12 to 24 months. However, that doesn't make the list of the top four strategies considered by leading organizations (Figure 3). These firms understand that, particularly in the case of dispatch, scheduling and routing - the algorithms that assign tickets and technicians run on specific rules that are governed by organizational processes and capabilities. Hence, leading firms are taking active steps to:

- **Map the required processes for overall work order management.** This entails considering the entire lifecycle of a work order, from how it is captured and created to how it is assigned and closed out. This also entails an understanding of the responsibilities carried by the members of the service organization, from dispatchers to technicians and wherein their intervention is required to sometimes override the optimal case provided by a scheduling algorithm.

- **Create and continuously evaluate rules and criteria used to determine the optimal technician for a particular service call.** Certain calls that are not urgent in nature can be assigned on the basis of technician location, familiarity or coverage area. However, calls that require an urgent response as determined by regulatory concerns or SLA covenants require a reevaluation of the optimal technician so as to resolve a pending issue as per requirements. Therefore it is essential for the organization to develop and evaluate rules for work order assignment.

- **Develop visibility into field resources**. From serviceable assets and customers to the location and capacity of technicians, parts, and service vehicles. Without visibility into assets, it becomes impossible to assign technicians based on location or status and equally difficult to ensure that they are routed to the customer site within required or promised response times.

Figure 3: Strategic Actions to Boost Service Delivery Efficiency

Map workflows and processes
for work order management
(job assignment, dispatch, order closure)
63%
53%

Develop real-time visibility into field assets
(equipment, vehicles, technicians)
(in terms of location and capacity)
50%
34%

Develop processes to allow for
and monitor dispatcher-led
exception handling
38%
25%

Develop rules / criteria for
customer response for both
normal operations and emergencies
35%
33%

■ Best-in-Class
□ All Others

0%   10%   20%   30%   40%   50%   60%   70%
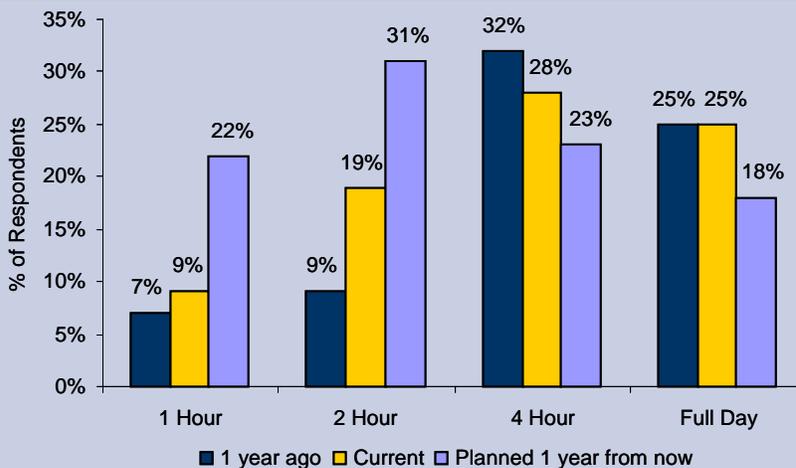
% of Respondents

Source: Aberdeen Group, June 2008

Aberdeen Insights — The Evolving Service Response Window

With customer expectations for shorter, more accurate response windows, delivery promises from service firms are moving to match customer needs. Currently 19% of responding firms indicate that they provide a two hour response window, up from 9% a year ago. Nine percent (9%) of firms indicate that they currently provide a one hour service response window with 22% indicating their desire to reach this level of response in the next 12 months.

Figure 4: The Evolving Response Window

% of Respondents

	1 Hour	2 Hour	4 Hour	Full Day
1 year ago	7%	9%	32%	25%
Current	9%	19%	28%	25%
Planned 1 year from now	22%	31%	23%	18%

■ 1 year ago □ Current □ Planned 1 year from now

Source: Aberdeen Group, June 2008

"Setting-up two hour windows can be quite challenging. It sometimes results in multiple call-backs but we try to offset by offering time/day options that work for the routes as well as our customers."

~ General Manager, Retail

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Chapter Two:
Benchmarking Requirements for Success

The success of any initiatives and programs adopted to support effective service delivery ultimately depend on the supporting cast of organizational capabilities and processes in place. The identification of these vital capabilities, specifically around asset and service performance management, and the organizational gaps that need to be overcome to put these in place will help service firms ascend to the status of Best-in-Class.

Case Study —
Four Seasons Heating and Air Conditioning of Chicago

Four Seasons Heating and Air Conditioning of Chicago is one of the U.S.'s largest privately-owned HVAC companies.

During the peak air conditioning and heating seasons, Four Seasons can be hit with over a thousand service calls a day. These surges in service calls lead to inefficient work order dispatch, delayed field updates, and created excess paperwork in the field. With all the paperwork stagnant in the field, proper invoicing could be delayed by as long as 3 weeks from the date of the service call. In addition, multiple calls had to be made to service technicians to inform them of changes or updates to work orders, leading to further delays. In an effort to streamline processes and information, Four Seasons had attempted the implementation of three mobile resource management systems without success.

The company therefore equipped itself with a service solution that provided the functionality to automate each step in service work order lifecycle - from creation, to scheduling and dispatch and order closure. The solution's 5-day integration timeline also supported Four Season's need to be up and running as soon as possible so as to efficiently serve the needs of its customers. Four Seasons created multiple forms for its Sales, Service and Repair departments eliminating the need for paperwork in the field. These forms were tailored so as to enable the capture of service-relevant data (from the back-end system as well as from the customer site) on handhelds that were being used by Four Season's technicians. Once captured, the new system also enabled the real-time transmission of service information for timely billing and customer information management.

continued

Fast Facts

√ **42%** of leading firms optimize service schedules in real-time

√ **75%** of leading firms leverage mobile field service applications

√ **58%** of Best-in-Class firms capture service performance in real-time

√ **$535,000** - average service cost savings for Best-in-Class from the adoption of schedule optimization solutions

Case Study —
Four Seasons Heating and Air Conditioning of Chicago

Four Seasons has seen significant results from their improved work order management processes and automation. Due to real-time data capture and transmission, they have slashed the time in obtaining data from the field into the office by over four days and improved their billing cycle by over a week - leading to a healthier cash flow. They have also seen a significant reduction in operating costs at the office and a sizeable increase in field productivity - partly due to improved processes and data capture and partly due to less time spent filling out paperwork. The company estimates an average annual savings of $2 million.

Competitive Assessment

Best-in-Class service firms, as determined by their performance in key indicators, exhibit several of the aforementioned capabilities that fall into the five categories of Aberdeen's Competitive Framework: (1) **process** (workflows for work order management - from creation to closure); (2) **organization** (corporate focus on the opportunity for improved customer service through oversight of service performance and the development of processes and programs); (3) **knowledge management** (making asset and service data available to stakeholders that require it the most); (4) **technology** (the selection of appropriate tools and the intelligent deployment of those tools); and (5) **performance management** (the ability of the organization to track / measure performance and drive further improvements with necessary modifications to processes in place).

Table 3: The Competitive Framework

	Laggards	**Average**	**Best-in-Class**
Process	Work Order Creation: CSR / Dispatcher takes service call and creates work order on a dispatch management system.		
	38%	48%	75%
	Customer directly creates service work order through web-based or phone-based interaction.		
	22%	31%	33%
	Work order automatically created via direct communication from serviceable asset.		
	19%	16%	21%
	Work Order Assignment: Dynamic scheduling (scheduling application continually assigns tickets as and when they are recorded based on preset criteria). Dispatchers primarily used for exception handling.		
	24%	21%	42%

	Laggards	Average	Best-in-Class
Organization	Service executive in place who has on-demand visibility into service performance.		
	14%	16%	50%
Knowledge	Service performance data used to consistently evaluate scheduling criteria.		
	11%	22%	42%
	Service performance data used to evaluate efficacy of staffing and resource levels.		
	19%	29%	54%
	Service data used to determine location for new service / dispatch centers and determine future resource / staffing.		
	14%	21%	33%
Technology	Service applications in place:		
	▪ 11% dynamic schedule optimization ▪ 14% knowledge management ▪ 16% intelligence / analytics ▪ 22% mobile field service solution ▪ 14% GPS-enabled vehicle tracking system ▪ 22% parts tracking and management	▪ 16% dynamic schedule optimization ▪ 14% knowledge management ▪ 17% intelligence / analytics ▪ 29% mobile field service solution ▪ 14% GPS-enabled vehicle tracking system ▪ 36% parts tracking and management	▪ 29% dynamic schedule optimization ▪ 42% knowledge management ▪ 29% intelligence / analytics ▪ 75% mobile field service solution ▪ 21% GPS-enabled vehicle tracking system ▪ 54% parts tracking and management
Performance	Periodic review of service performance (by geography / by technician). Review includes compliance with optimal routes, scheduled order of work		
	30%	43%	50%

Source: Aberdeen Group, June 2008

Capabilities and Enablers

The Best-in-Class capabilities across the five recognized categories as identified in the competitive framework align with and support the strategic actions taken by leading service organizations, as highlighted in the previous chapter. They also highlight steps taken by leading organizations to support both the planning and execution portions of the service delivery process.

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Process

After taking strategic steps to map out processes for the entire lifecycle of a work order, leading firms are actively leveraging tools to ensure the accurate capture and prompt delivery of information to appropriate parties so as to expedite issue resolution.

At the order creation stage, leading firms are shying away from paper-based orders as leveraged by nearly 60% of Laggards, who have their Customer Service Representatives (CSRs) and dispatchers open work orders on paper-based records after contact from a customer. In contrast, three-fourths of leading firms have their CSRs / Dispatchers open orders in a dispatch management system, wherein the information can promptly be aggregated into the overall scheduling process. Thirty-three percent (33%) of leading firms also provide their customers with the ability to automatically create service orders upon the occurrence of an issue that requires service, compared to 28% of all other firms. Finally, 21% of firms also leverage remote monitoring capabilities to automatically open service orders upon notice of asset failure or performance drop directly captured from the asset.

Once the order is created, 42% of leading organizations rely on dynamic optimization tools to ensure the appropriate allocation of work orders based on pre-stated rules and criteria. Only 23% of all other firms indicate their reliance on dynamic scheduling tools. Nearly a fourth of non-Best-in-Class firms continue to rely on schedules that are created on a weekly basis, and it can be inferred that incoming calls do not attain technician attention till the following week. This raises the potential for customer dissatisfaction, as a week of waiting can magnify the amount of revenue lost for the asset operator from a non-functional asset.

"Our goal is to better control costs/service by capturing the visibility to the activities, especially the exceptions. On top of this, we want to capture these activities and exceptions electronically for improved business intelligence."

~ General Manager, Retail

Aberdeen Insights — Scheduling Criteria

As stated above, dynamic scheduling solutions are actively leveraged by leading firms. These solutions rely on algorithms that schedule the "best" technician for a pending work order based on established organizational rules and criteria. Dynamic Optimization infers that the algorithm is allowed to run continuously so as to assimilate new work orders with the existing workload. Often the optimization algorithm is run in batches, once or twice a day so as to reset schedules at the time the batch is run and provide technicians with their schedules for the rest of the day.
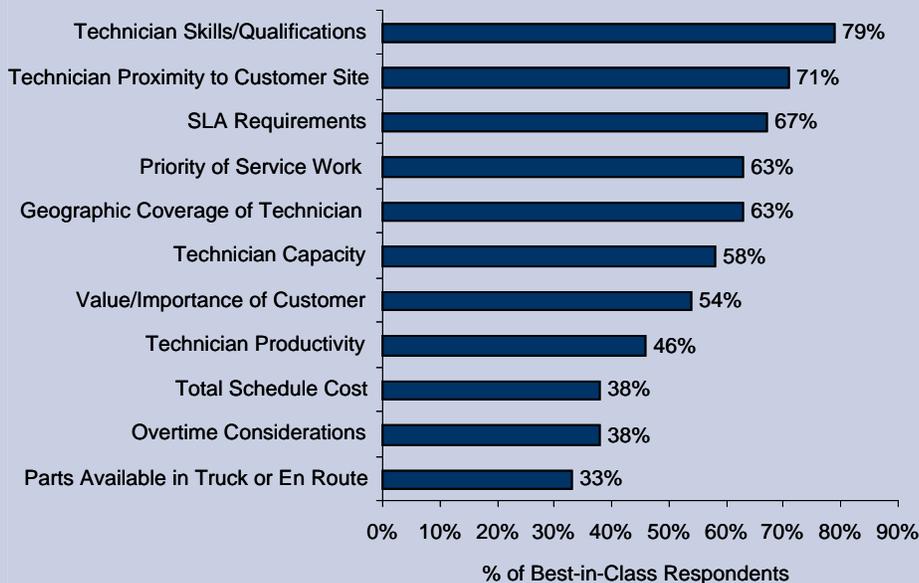
As highlighted below in Figure 5, there are a wide variety of criteria used by leading firms to ensure that the right technician is assigned to a specific work order. Noteworthy is the fact that skills and qualifications trump proximity, essentially meaning that the closest technician might not be the best for a particular work order, especially if he or she doesn't have the appropriate expertise or tools necessary to resolve issues on a first visit.

continued

Aberdeen Insights — Scheduling Criteria

While a similar list of criteria is used by non-Best-in-Class firms, two major criteria ignored by these firms are SLA covenants (67% for Best-in-Class versus 45% for all others) or the value / importance of the customer or asset-operator (54% for Best-in-Class versus 34% for all others). A lack of focus on and visibility into SLA requirements can lead to significant penalties and damage to the reputation of the service organization. In terms of customer importance, there are increasing trends from leading firms towards the segmentation of customers to identify supplemental revenue opportunities. For instance, customers running mission critical assets may be willing to pay more for tighter response windows or the promise of higher asset uptime, which could lead to millions of dollars of savings. A lack of focus on customer importance can lead a service organization to bypass these supplemental revenue opportunities.

Figure 5: Top Scheduling Criteria

Technician Skills/Qualifications — 79%
Technician Proximity to Customer Site — 71%
SLA Requirements — 67%
Priority of Service Work — 63%
Geographic Coverage of Technician — 63%
Technician Capacity — 58%
Value/Importance of Customer — 54%
Technician Productivity — 46%
Total Schedule Cost — 38%
Overtime Considerations — 38%
Parts Available in Truck or En Route — 33%

% of Best-in-Class Respondents

Source: Aberdeen Group, June 2008

"The two major factors driving us to consider improved service scheduling are cost and service levels, especially the need to meet differentiated SLA targets."
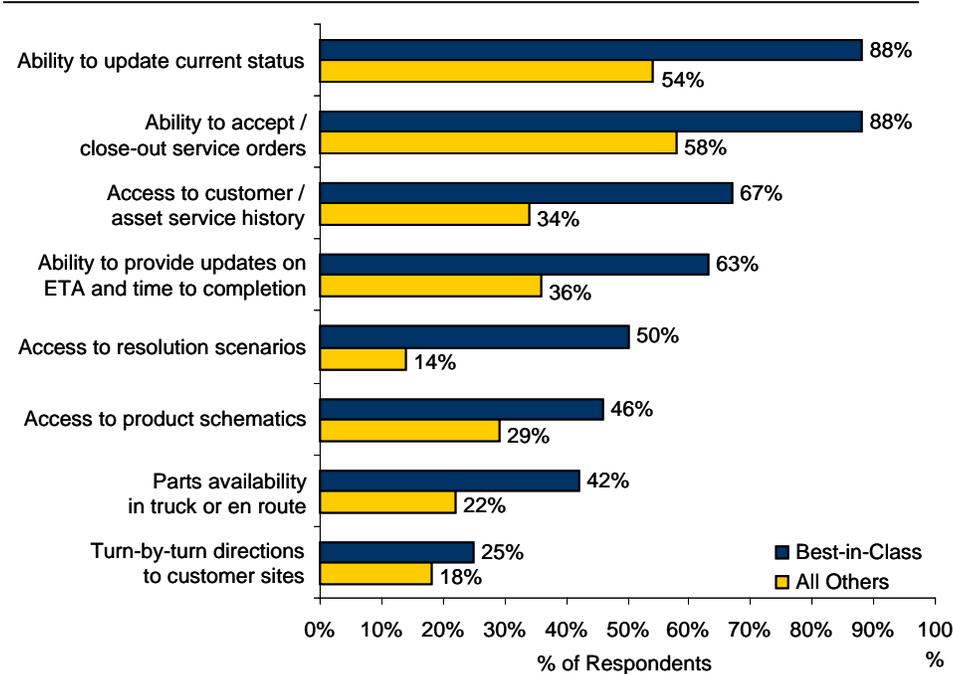
~ Manager, Service Strategy, Global Office Equipment Manufacturer

Technology

To complete the work order cycle, leading firms are also taking the necessary steps to equip their technicians with the appropriate mobile tools so as to ensure the prompt acceptance of work orders (Figure 6). Real-time communication of orders with technicians in the field also allows the optimization engine or the dispatcher to make appropriate adjustments if a technician is delayed or unable to make the next scheduled job. Mobile tools can also enable service technicians to promptly and accurately identify parts used so as to update inventory while facilitating faster billing and invoicing

for parts and services. In addition, mobile tools also allow technicians to access product schematics and issue resolution scenarios so as to facilitate efficient service resolution while promoting the capture and storage of resolution notes and further best practices.

Figure 6: Tools Available to Mobile Technicians

	Best-in-Class	All Others
Ability to update current status	88%	54%
Ability to accept / close-out service orders	88%	58%
Access to customer / asset service history	67%	34%
Ability to provide updates on ETA and time to completion	63%	36%
Access to resolution scenarios	50%	14%
Access to product schematics	46%	29%
Parts availability in truck or en route	42%	22%
Turn-by-turn directions to customer sites	25%	18%

% of Respondents

Source: Aberdeen Group, June 2008

To enable communications and the flow of information between the field and the back-end, three-fourths of leading service companies are actively leveraging mobile field service applications, and are almost three times as likely as all others to have these applications in place. To feed information to the mobile workers, these firms are two times as likely as all others to rely on dynamic scheduling tools to submit work order schedules to their field technicians.

These firms are also three times as likely as all others to leverage knowledge management systems that not only enable their technicians to access resolution scenarios, but also allow for the capture of information pertaining to service and asset history so as to make it available to all pertinent parties within the organization. The capture of asset and service performance also enables these leading firms to effectively leverage analytics and intelligence tools so as to provide their senior executives with visibility into possible trends or service gaps that need to be addressed by dedicating or reallocating service resources.

"First time fix is very important because it reduces cost of services, improve productivity and improves customer satisfaction. We are working on it by improving the problem diagnosis and letting the service engineer to have all he needs to solve the problem."

~ Senén Pájaro Novoa Director of Service Quality Fujitsu Espana

Table 4: Applications in Place to Support Service Delivery

Application Type	% of Respondents with Application Currently in Place	
	Best-in-Class	All Others
Mobile field service application	75%	27%
Knowledge management	42%	14%
Dynamic scheduling application	29%	14%
Intelligence / analytics	29%	17%
GPS-enabled vehicle tracking	21%	14%

Source: Aberdeen Group, June 2008

Knowledge Management

From the Competitive Framework (Table 3), it is evident that a key differentiating factor for service organizations is having the tools in place to enable the capture of service and asset performance and making that information available to stakeholders across the service organization. If a service organization is composed of an aging field workforce, the ability to capture and store information and expertise becomes all the more vital.

However, leading firms are also taking active strides in ensuring that this information is acted upon. From a technician's perspective, Figure 6 revealed that technicians at leading firms are nearly two times as likely to have access to product schematics and nearly four times as likely to have access to possible issue resolution scenarios, as captured by past technicians who may be more experienced in the repair or maintenance of that particular asset. Therefore, while the prioritization of the right technician from a skills / qualifications point of view is a top scheduling criteria, these technicians are provided with assistance in the field should they run into issues that they have not encountered. This can have an impact on the technician's ability to resolve a service issue on a first-time basis. In fact, firms that indicate providing their technicians with access to resolution scenarios show a 16% (70.2% versus 60.4%) advantage in first-time fix compared to those who do not.

"We have to do more with less and we are trying to minimize the need for "tribal" knowledge to help with the learning curve related to turn over in our dispatchers and to allow centralization of the dispatching function."

~ Field Operations Director
Retail Technology and Services Provider

Table 5: Knowledge Access and First-Time Fix

Technicians Have Mobile Access to Issue Resolution Scenarios	Current First-Time Fix Performance
Currently in place	70%
Not in place	60%

Source: Aberdeen Group, June 2008

Beyond technician access, the capture of service and asset performance also strengthens the planning and forecasting ability of the service organization, a

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key driver for improved service performance. In essence, while execution from a scheduling perspective can improve speed and efficiency of service, it can be greatly strengthened with foresight and planning that ensures that resources are adequately placed so as to meet future service demand. Leading service firms are two times as likely as other organizations to leverage forecasting and planning applications to aid their scheduling processes. Ultimately, not only are these organizations actively forecasting and planning for future service needs but they are constantly revisiting these forecasts and plans based on service performance data, as indicated by 54% of Best-in-Class firms. With this information in hand, these firms are also actively evaluating current resource levels and also considering the deployment of new dispatch centers or acquisition of service resources.

Aberdeen Insights — Getting the Customer Involved

While effective knowledge management is becoming a key enabler within the walls of the service organization, there is also an emerging trend in increasing customer access to and participation in the overall service delivery process. Not only does this involve providing customers with increased access to self-service scenarios to mitigate unnecessary dispatches and reduce response times, but also in providing customers with increased visibility into the status and location of service resources.

Table 6: Customer Involvement in Service

Customer Ability / Access to	% of All Respondents	
	In Place	Currently Evaluating
Create service ticket	27%	25%
Order service parts	20%	21%
Web chat with customer care	19%	16%
Self-service scenarios	17%	28%
View technician / part location or status	16%	22%
Email / text update on service status	14%	27%
Update status (at home / away)	13%	15%

Source: Aberdeen Group, June 2008

Performance Management

All the advantages of pre-emptive service demand planning and forecasting are nullified if the service organization isn't adequately positioned to capture and track service performance. As such, 58% of leading service firms indicate that they capture service performance in real-time, compared to 24% of all other firms. Along with customer satisfaction, the key metrics captured and monitored by these organizations mirror the pressures faced in controlling service costs while driving service speed and productivity, as

measured by workforce utilization, productivity and mean time to repair. Once these metrics are captured, leading organizations are also using that data to reevaluate pre-determined scheduling criteria and adjust those for improved performance, but they are also actively looking at drill down analysis of technician compliance with established optimized schedules or best routes (50% of Best-in-Class versus 39% for all others). Without organizational adherence to these optimal outputs, the investment in service delivery automation can be marginalized.

Aberdeen Insights — Performance Management

In the selection of a system to automate service delivery processes, responding executives indicate that the total cost of ownership is the top factor that can ultimately make or break the deal. Often this measure leads to the calculation of an overall return on investment on technology purchases. Without accurate capture of service performance metrics before, during and after process automation, it is challenging to develop a clear picture of a true Return on Investment. For instance, firms responding to Aberdeen's survey have indicated that since the adoption of scheduling optimization solutions, they have noticed a 20% improvement in workforce productivity, a return that would have been impossible to capture and quantify without accurate visibility into service performance.

Table 7: Improvements from Optimized Scheduling

Metric	Avg. Change Since Adoption of Optimized Scheduling for BIC
Mean Time to Repair	-7%
Workforce utilization	19%
First-time fix	12%
Workforce productivity	20%
Total service cost	-$535,903

Source: Aberdeen Group, June 2008

Organization

All Best-in-Class capabilities involved in Aberdeen's competitive framework are ultimately glued together by the organization's focus on service delivery and customer service as a core differentiator and value generator. From the development of optimal scheduling processes and the need to capture real-time information to the investment in technology: each one of these facets is ultimately impacted by the existence of a senior service executive who can look at the entire service supply chain and understand the contribution of each facet. As indicated in past Aberdeen research, the existence of this executive-level service cheerleader is central to the attainment of a Best-in-Class status. Once again, responding Best-in-Class firms confirm that they

"Improved work order management and scheduling has led to greater than 20% jump in customer satisfaction."

~ Senén Pájaro Novoa Director of Service Quality Fujitsu Espana

are nearly two times as likely as all others to have such an executive in place. These firms are also more than three times as likely as all others to provide their service executives with the appropriate tools and dashboards to evaluate current service performance and make strategic decisions regarding the future of service in their organizations.

Chapter Three:
Required Actions

Whether a company is trying to move its performance in service delivery and customer service from Laggard to Industry Average, or Industry Average to Best-in-Class, the following actions will help spur the necessary performance improvements:

Laggard Steps to Success

- **Do away with paper-based work order management and scheduling.** Nearly 60% of Laggards continue to rely on paper-based work order management systems wherein their CSRs capture customer and service information and create paper-based service orders for scheduling and dispatch. Not only does this increase the probability of issues falling between the cracks, but also makes it more difficult to promptly close out work orders for appropriate billing and performance measurement.

- **Reduce reliance on weekly scheduling.** Along with moving away from paper-based systems, Laggards should also consider increasing the frequency of scheduling batches. While the jump from weekly scheduling to real-time might be too dramatic a leap, the gradual move from weekly to daily scheduling can lead to significant improvements. Thirty-two percent (32%) of Laggards currently schedule on weekly basis compared to 17% of Best-in-Class. Laggards that do schedule on daily basis see a 25% advantage in workforce utilization and 28% lead in workforce scheduling efficiency over those who continue to rely on weekly scheduling.

- **Provide executives with on-demand visibility into service performance.** While service executive presence in Laggards is increasing, as indicated by the 35% response rate, only 14% provide their executives with on-demand visibility into service performance. However, 43% are currently in the process of improving their executive visibility into service performance metrics.

- **Focus on the last mile of technician routing.** Nearly a quarter of Laggards are currently evaluating technology to provide their technicians with real-time traffic, predictive weather and other capabilities, however only 18% currently provide their technicians with basic routing and turn-by-turn directions. Even if technicians are familiar with designated coverage areas, turn-by-turn directions, especially in the last mile to the customer door, can provide a significant boost to on-time service delivery and overall workforce productivity.

Recommendations

√ Move away from paper-based work order management

√ Increase the frequency of scheduling runs

√ Provide mobile workers with appropriate tools for work order management as well as access to service knowledge and resolution best practices

√ Increase SLA and parts visibility to complete the service delivery equation

Industry Average Steps to Success

- **Drive toward real-time capture of service performance.**
  Currently only 22% of Industry Average organizations capture service performance data in real-time, significantly behind Best-in-Class organizations, of whom 58% indicate having this capability. Having performance data on hand significantly impacts the ability of the service organization to measure its ability to meet customer expectations while improving the organization's ability to make prompt adjustments to service demand forecasts and plans. Forty percent (40%) of Industry Average firms are actively considering the attainment of real-time performance capture in the next 12 to 24 months.

- **Integrate planning capabilities into service execution.**
  As an impact of not having real-time performance capture, Industry Average organizations severely lag behind Best-in-Class firms in their planning and forecasting capabilities. Only 22% periodically use service performance data to evaluate established scheduling criteria while only 29% indicate the scrutiny of service performance data to evaluate the efficacy of resource and staffing levels.

- **Don't leave your technicians on an island.** Industry Average service firms are ahead of their Laggard counterparts in the adoption of mobile technology (29% versus 22% for Laggards) and in providing their technicians with the ability to capture work order information in the field. However, only 14% of these firms use those tools to provide their technicians with access to resolution ideas and best practices as compared to 50% of Best-in-Class organizations. As indicated before, first-time fix is significantly impacted by the provision of access to resolution scenarios to field technicians, which can significantly help remove costly secondary or tertiary dispatches.

Best-in-Class Steps to Success

- **Evaluate alternative forms of work order creation.** A third of leading service organizations currently allow their technicians to directly create service tickets through a web portal or self-service system, with 21% indicating that they automatically create maintenance orders on information directly captured from the serviceable asset itself. These alternative forms of work order creation and appointment booking can greatly increase the incidence of preventive maintenance visits prior to asset failure and therefore help minimize asset downtime and customer angst. Approximately 38% of leading firms are currently evaluating the increase of customer participation in work order creation while 25% are currently evaluating remote monitoring capabilities in the next 12 to 24 months.

"Due to Improved service scheduling and work order management, we have experienced: - Improvement in customer satisfaction survey score from 66% to 93% - Work backlog reduced from 60,000 to 7,000 hours - Several hundred thousand pounds of cost reduction by bringing in-house work that had previously been outsourced to contractors. In one area use of contractors dropped by 66%."

~ Solutions Architect, Utilities

- **Increase tracking of parts in the scheduling equation.** In criteria used to schedule technicians for service requests, parts availability in truck or en-route falls to the bottom of the list for Best-in-Class organizations. Inadequate visibility into parts availability can dramatically affect work order completion and first-time fix and without the "right" part, the perfect service delivery equation remains incomplete.

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Appendix A:
Research Methodology

Between May and June 2008, Aberdeen examined the use, the experiences, and the intentions of 160 service and manufacturing enterprises using dispatch, scheduling and routing tools to boost service productivity, drive down service costs, and improve customer satisfaction

Aberdeen supplemented this online survey effort with telephone interviews with select survey respondents, gathering additional information on service delivery strategies, experiences, and results.

Responding enterprises included the following:

- *Job title / function:* The research sample included respondents with the following job titles: C-Level executive (15%); Vice-President or Director (23%); Manager (35%); and Engineer or Dispatcher (8%).

- *Industry:* The following industries had the largest representation in the study: Telecommunications (15%); Industrial Equipment Manufacturing (13%); Utilities and Mining, Oil and Gas (13%); IT Services (13%); and Office Equipment (8%).

- *Geography:* The majority of respondents (61%) were from North America. Remaining respondents were primarily from the Asia-Pacific region (11%) and Europe, Middle East and Africa (23%).

- *Company size:* Twenty-six percent (26%) of respondents were from large enterprises (annual revenues above US $1 billion); 36% were from midsize enterprises (annual revenues between $50 million and $1 billion); and 38% of respondents were from small businesses (annual revenues of $50 million or less).

- *Field Service Headcount:* Thirty percent (30%) of respondents were from large service enterprises (field technician headcount greater than 500); 38% were from midsize service enterprises (field technician headcount between 50 and 500); and 32% of respondents were from small field service businesses (technician headcount less than 50).

Solution providers recognized as sponsors were solicited after the fact and had no substantive influence on the direction of this report. Their sponsorship has made it possible for Aberdeen Group to make these findings available to readers at no charge.

Study Focus

Responding service and manufacturing executives completed an online survey that included questions designed to determine the following:

√ The degree to which schedule and route optimization technology is deployed in their service operations and the financial implications of the technology

√ The structure and effectiveness of existing technology implementations

√ Current and planned use of service delivery technology to aid operational break / fix and preventive maintenance activities

√ The benefits, if any, that have been derived from automation initiatives

The study aimed to identify emerging best practices for service delivery, and to provide a framework by which readers could assess their own management capabilities.

Table 8: The PACE Framework Key

Overview
Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows: **Pressures —** external forces that impact an organization's market position, competitiveness, or business operations (e.g., economic, political and regulatory, technology, changing customer preferences, competitive) **Actions —** the strategic approaches that an organization takes in response to industry pressures (e.g., align the corporate business model to leverage industry opportunities, such as product / service strategy, target markets, financial strategy, go-to-market, and sales strategy) **Capabilities —** the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products / services, ecosystem partners, financing) **Enablers —** the key functionality of technology solutions required to support the organization's enabling business practices (e.g., development platform, applications, network connectivity, user interface, training and support, partner interfaces, data cleansing, and management)

Source: Aberdeen Group, June 2008

Table 9: The Competitive Framework Key

Overview	
The Aberdeen Competitive Framework defines enterprises as falling into one of the following three levels of practices and performance: **Best-in-Class (20%) —** Practices that are the best currently being employed and are significantly superior to the Industry Average, and result in the top industry performance. **Industry Average (50%) —** Practices that represent the average or norm, and result in average industry performance. **Laggards (30%) —** Practices that are significantly behind the average of the industry, and result in below average performance.	In the following categories: **Process —** What is the scope of process standardization? What is the efficiency and effectiveness of this process? **Organization —** How is your company currently organized to manage and optimize this particular process? **Knowledge —** What visibility do you have into key data and intelligence required to manage this process? **Technology —** What level of automation have you used to support this process? How is this automation integrated and aligned? **Performance —** What do you measure? How frequently? What's your actual performance?

Source: Aberdeen Group, June 2008

Table 10: The Relationship Between PACE and the Competitive Framework

PACE and the Competitive Framework – How They Interact
Aberdeen research indicates that companies that identify the most influential pressures and take the most transformational and effective actions are most likely to achieve superior performance. The level of competitive performance that a company achieves is strongly determined by the PACE choices that they make and how well they execute those decisions.

Source: Aberdeen Group, June 2008

Appendix B:
Related Aberdeen Research

Related Aberdeen research that forms a companion or reference to this report includes:

- *Improving Productivity and Profitability through Service Fleet Management*; March 2008

- *The Impact of Location on Field Service*; December 2008

- *Making Money via Mobile Field Service*; July 2007

- *Service on Time, All the Time*; April 2007

- *Service on the Move: Driving Profitability via Fleet Management*; March 2007

- *Location. Location. Location. Does it Matter in Mobile Field Service?*; December 2006

Information on these and any other Aberdeen publications can be found at www.aberdeen.com.

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