Advanced Scheduling Execution

Maximizing the Utilization of Service Resources

December 2009

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Executive Summary

At the Chief Service Officer Summit 2007, Day 1 keynote speaker Michael Treacy opened his presentation with a riddle aimed at the attending audience of Chief Service Officers. It went: "*What is it that the less I need, the happier I am……but the more I get, the happier I am?*" Given the context and the audience, it didn't take long for most to decipher the answer to the riddle: service. We would all love to have 100% uptime on the assets and equipment that we rely on and not have to be bothered by service interruptions, but the toll of wear and tear and other factors creates the need for effective service. As such, when equipment does fail or isn't performing up to par, we desire the very best level of service, in terms of speed and quality, so that the equipment in question is up and running as soon as possible. For the servicing organization, the delivery of the very best level of service requires a significant degree of resource optimization.

Best-in-Class Performance

In November 2009, Aberdeen Group surveyed over 160 service professionals to distinguish Best-in-Class companies from Industry Average and Laggards. Those defined as Best-in-Class averaged the following:

- 10% year-over-year decrease in mean-time-to-repair
- 86% current performance in first-time fix
- 79% current level of workforce utilization
- 86% compliance with response/completion requirements

Competitive Maturity Assessment

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

- Fifty percent (50%) more likely than all others to automate the creation of service schedules
- Almost twice as likely as all others to use dynamic scheduling tools
- Thirty percent (30%) more likely than all others to capture and measure service performance in real-time or near real-time
- Considerably less likely (19% for all others vs. 8% for Best-in-Class) to wait a week or longer to run scheduling batches

Required Actions

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

- Map the workflows in the entire service delivery process
- Centralize the process of scheduling
- Do away with manual paper-based scheduling
- Increase the frequency with which scheduling batches are run

"We need to deliver a unique customer experience by balancing cost, quality and timeliness. If we compromise on one of the three pillars in that service triangle, the value delivered to the customer is compromised."

~ Brian Wathen,
Client Services Director,
a&o systems+services UK Ltd

Table of Contents

Figures

Tables

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Chapter One:
Benchmarking the Best-in-Class

The Last Line of Defense

Just as asset-operators or consumers rely heavily on effective service to ensure product or asset uptime, so too do service and manufacturing organizations heavily rely on the effective dispatch and scheduling of their resources to ensure that they are meeting ever increasing customer demands in the most cost-effective manner. This is no easy task, given that the average organization polled in Aberdeen's recent Scheduling research indicates that it manages approximately 900 technicians who attend to 3.7 jobs a day and need to drive an average of 70 miles to get to those jobs (Table 1). Add in the fact that 19% of service dispatches are managed by third-party organizations, and the management of service resources becomes even more challenging.

Table 1: Insight into the Average Service Respondent

Category	Average Result
Percent of Issues Requiring Dispatch	59%
Orders Handled by Third Party Techs	19%
Avg. Technicians 2009	900
Avg. Dispatchers 2009	51
No: Work Orders Completed Daily/Technician	3.7
No: Miles Driven Daily/Technician	70 miles
Avg. Response Time Required	117 mins
Avg. Response Time Achieved	121 mins
Compliance with Response/Completion Times CURRENT	74%
Penalties Occurred in Last 12 Months for Missed Deadlines	$576,000

Source: Aberdeen Group, November 2009

In recent times, Aberdeen's research on self-service (*Delivering Customer Service via the Contact Center and the Web* - September 2009) and remote service (*The Evolution of Remote Product Service* - April 2009) have highlighted the increasing use of various service delivery channels by service organizations to better meet customer needs while eliminating significant costs. While Aberdeen believes that the use of these channels will continue to rise, the fact remains that 59% of service requests still require a service dispatch. A majority of these dispatches are scheduled to meet break/fix and repair needs, mixed with preventive maintenance and installation visits (Figure 1). Some of the work required for preventive maintenance and installation, requires the scheduling of multiple resources (parts, vehicles, people etc.) over multiple days with multiple interdependencies to ensure

Fast Facts

√ 74% current compliance level with response / completion times across all organizations

√ $576,000 average penalties occurred for all respondents in the last 12 months due to missed response or completion times

√ 59% of all service requests still require a technician dispatch

√ 64% of survey respondents conduct both short-duration and complex work

√ 79% current level of workforce utilization for Best-in-Class organizations, compared to a 51% level for all others

√ 58% of Best-in-Class organizations are looking to raise visibility into their field assets to alleviate cost, productivity and customer satisfaction pressures

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on-time completion of the project. This is true in numerous industries such as construction, oil and gas, and in the maintenance of large infrastructure projects. In fact, complex long duration projects can also be of the break/fix type if one were to consider the recent work done to repair Bay Bridge in San Francisco. Sixty-four percent (64%) of survey respondents indicated that they conduct both short- and long duration work, with 69% of those respondents indicating that they leverage the same workforce for both kinds of work. This raises the importance of effective resource management.

Figure 1: Reasons for Technician Dispatch
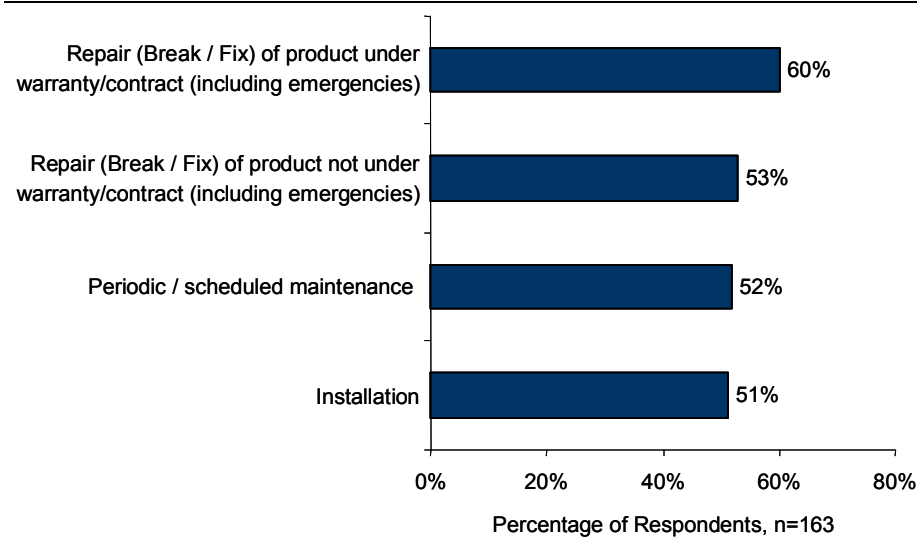
Definitions

√ Short-duration work usually reflects work involving a single technician working on a single task over a short period of time

√ Complex / long-duration work requires multiple resources working simultaneously and might span over numerous hours, days or weeks

Reason	Percentage
Repair (Break / Fix) of product under warranty/contract (including emergencies)	60%
Repair (Break / Fix) of product not under warranty/contract (including emergencies)	53%
Periodic / scheduled maintenance	52%
Installation	51%

Percentage of Respondents, n=163

Source: Aberdeen Group, November 2009

Why Schedule Better?

As it is for any component of a business that commands 50% or more of the work, service and manufacturing organizations are looking to improve the command of their field resources so as to maximize utilization while meeting and beating customer needs (Figure 2). It should be noted that improvements in overall workforce productivity only address part of the overall effective service delivery equation. A boost in productivity without a corresponding improvement in workforce utilization or efficiency may not result in the desired customer and cost benefits sought by service organizations. E.g. if a service technician is getting to more jobs during a day but is spending more time on the road instead of turning wrenches, or isn't able to resolve an issue effectively despite getting to the service site, then the net result isn't what is ultimately desired. The customer still has a non - functioning asset or incomplete project, while the cost of that service visit has multiplied due to the need for a revisit.

"In regard to speed and quality of service, customers are expecting more, especially with more internet purchasing; service expectations are similar in terms of turnaround."

~ Director,
Large North American
Industrial Equipment
Manufacturer

**Figure 2: Pressures for Optimized Resource Management and
Scheduling**
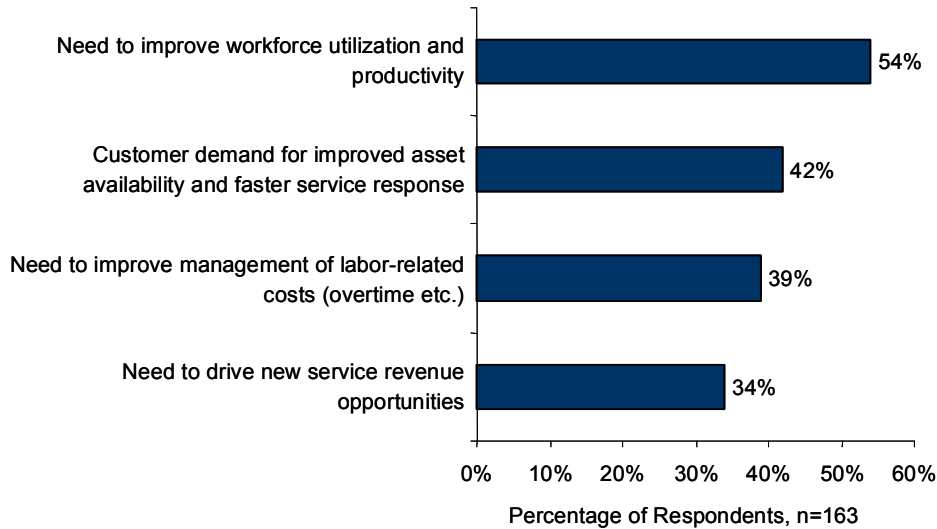
Source: Aberdeen Group, November 2009

With reference to unmet customer needs, it would be one thing if all service resources needed to be aligned to hit a stationery target, but it's a whole new ball game when one considers the constant change in service delivery expectations of today's customers. Ninety-three percent (93%) of survey respondents claim that customer requirements for service response and repair have either increased (faster response) or remained the same over the last 12 months. Currently, survey respondents report a 74% success rate in meeting response/completion time requirements, up from 69% last year, and have had to pay significant penalties, an average of $576,000, due to non- compliance with response or completion times.

In addition to outlays associated with penalties, service firms are also faced with rising labor and vehicle-related costs. While not in the top four represented pressures (Figure 2), the need to improve management of vehicle-related costs was cited as a top concern by 20% of survey respondents. In connection with the 39% who indicate that labor costs are a key concern, there is a significant need on the part of service firms to manage their resource cost structures. It should be noted that in the management of cost (and productivity) channels, 72% of respondents are looking to do more with current resource levels as opposed to the rest who are looking to actually eliminate resources. Of further interest is the fact that 92% of Best-in-Class organizations are looking to do more with the same level of resources when compared to 66% of all other respondents. Effectively, firms in the non Best-in-Class categories are much more likely to be looking to cut resources in their service organizations.

Along the theme of doing more, nearly a third of organizations also indicate that they are looking to drive new revenue opportunities with better resource management. With improved service delivery efficiency, service

"As with most organizations there is a strong desire not to add additional headcount and to keep expenses flat year to year. So we must find ways to do more with the same resources. We believe by optimizing our scheduling and routing, we should gain productivity in calls per day while reducing / maintaining our current expenditures."

~ Director, Field Service, Large North American Retail Organization

firms are hoping to ratchet up their contract compliance rates with regards to response and completion times and thereby looking to sustain and perhaps improve customer retention, contract renewal rates and overall customer spend. This focus on capitalizing on and monetizing customer loyalty is prevalent in leading service organizations and was a key area of discussion at Aberdeen's 2009 Chief Service Officer Summit.

To wrap up the key pressures, 33% of respondents indicate that they are looking for better scheduling as a means of differentiation from the competition. This is a theme echoed by Brian Wathen from a&o systems+services UK Limited (see Case Study). Effective scheduling raises the profile and level of professionalism attached to the service organization in the mind of the customer. This level of professionalism could very well be the factor that helps keep or win over a key customer account.

Aberdeen Insights — Scheduling Windows

Customers are demanding more of their service organizations, not only with regards to speed and efficiency of service, but also in the accuracy of appointment windows that are being provided. Customers are no longer accepting full-day windows wherein the service organization claims that the technician/crew will be on site between 9am and 5pm. Therefore service organizations are beginning to provide more precise and shorter appointment windows to their customers and there are increasing intentions to move towards the one or two-hour window with assistance of more advanced scheduling tools, though the uptick since 2008 has been negligible. Most windows are either of the full-day or four hour variety with increasing intentions of moving away form the full-day service appointment windows (Table 2).

Table 2: Evolving Appointment Windows

	Percentage of Respondents		
	2008	**Current**	**2010 Estimate**
1- Hr Window	6%	6%	13%
2- Hr Window	15%	19%	25%
4 - Hr Window	33%	38%	31%
6 - Hr Window	7%	11%	11%
Full Day	49%	42%	34%

Note: Total in columns may be greater than 100% as firms offer combination of appointment times
Source: Aberdeen Group, November 2009

Service as a Source of Differentiation

Thirty-three percent (33%) of organizations state that the need to achieve differentiation is a major pressure driving investments in service scheduling solutions. Not only is this echoed by a&o systems+services UK Limited but was also a constant theme at the 2009 CSO Summit. At the event, Steffen Low, Vice President of Business Critical Services at Symantec, talked about the lead role that service organizations need to take to fill the customer experience gap so as to help differentiate the brand of the entire organization (product + support + services).

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The Maturity Class Framework

The ability to manage the highlighted pressures (Figure 2) is the true measure of a Best-in-Class service organization. In the world of service scheduling, it is often said that the Best-in-Class management of service resources to meet cost, productivity, and customer satisfaction pressures ensures that the right technician is available at the right place at the right time with the right part.

If this is the case, then service issues should be resolved on a first-visit basis, a metric in which Best-in-Class organizations outperform their peers by a significant margin. In comparison to the 86% first-time fix performance for Best-in-Class, all other organizations return a 58% first-time fix performance. Aberdeen's research indicates that for every task that isn't completed on a first-visit basis, an additional 1.5 visits are required on average to resolve that issue.

A simple example can highlight some of the cost ramifications of ineffective service delivery. A 60% success rate in first-time fix indicates that 40% of all service calls require an additional 1.5 service visits. If the average service technician gets to 3.7 tasks a day (Table 1), a firm with only 10 technicians would be faced with approximately 15 calls (3.7x10x40%) that aren't resolved on a first visit basis, thereby requiring approximately 23 (15x1.5) additional visits. Aberdeen's research (*The Evolution of Remote Product Service* April 2009) has highlighted that the cost of an average technician visit is $276, thereby placing the additional daily cost incurred for a 10 person shop at $6,400 approximately (23x276). Depending on the size of the servicing organization, and the industry served, that cost of inefficiency can grow exponentially.

While the example makes several assumptions regarding resource usage and substitution, it does highlight the fact that there is a significant cost tied to ineffective or inaccurate scheduling. What it doesn't highlight is the fact that in the entire rigmarole of 1.5 additional visits, the customer is left with a non-functional asset or an incomplete project. The example also doesn't account for lost business that results from customers who didn't receive adequate service, and the costs associated in trying to reclaim that business.

From an operational perspective, Best-in-Class organizations are driving significantly higher levels of utilization for their resources. Their workforces are on the job turning wrenches nearly 80% of the time as compared to a 51% level of utilization for all other firms. Therefore, technicians at non Best-in-Class firms spend a significant amount of time in transit or sitting idle while their Best-in-Class counterparts are actively resolving issues and boosting customer loyalty. A metric that wasn't leveraged to determine Best-in-Class, but highlights the operational prowess of these organizations is workforce scheduling efficiency. This metric ultimately measures the proportion of work orders completed over those that are scheduled. For example, if 10 orders were scheduled for the day, and 8 were completed, the efficiency would be at 80%. Best-in-Class firms, owing to better visibility

Quantifying the Cost of Not Fixing it the First Time

A 60% success rate in first-time fix indicates that 40% of all service calls require an additional 1.5 service visits. If the average service technician gets to 3.7 tasks a day an organization with only 10 technicians would be faced with approximately 15 calls (3.7x10x40%) that aren't resolved on a first visit basis, thereby requiring approximately 23 (15x1.5) additional visits. At $276 a service visit, a 10 person service shop experiences an additional daily cost burden of approximately $6,400 (23x276).

into the status and constraints of their resources, reveal a 82% level of scheduling efficiency as opposed to a 63% level for all other firms.

With better resource utilization and first-time fix, Best-in-Class organizations are also seeing significant improvements in mean time to repair and overall productivity over the last 12 months. As a combined result, these organizations reveal a much higher level of compliance with required response and completion times when compared to all other firms (Table 3).

Table 3: 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 performance in first-time fix ▪ 79% current performance in workforce utilization (wrench time) ▪ 10% decrease in mean time to resolution over the last 12 months ▪ 86% current level compliance with required response/meeting completion times
Industry Average: Middle 50% of aggregate performance scorers	▪ 66% current performance in first-time fix ▪ 59% current performance in workforce utilization (wrench time) ▪ 4% decrease in mean time to resolution over the last 12 months ▪ 73% current level compliance with required response/meeting completion times
Laggard: Bottom 30% of aggregate performance scorers	▪ 27% current performance in first-time fix ▪ 30% current performance in workforce utilization (wrench time) ▪ No change in mean time to resolution over the last 12 months ▪ 62% current level compliance with required response/meeting completion times

Source: Aberdeen Group, November 2009

The Best-in-Class PACE Model

Aberdeen's PACE framework is designed to highlight the key strategies and capabilities employed by firms that attain Best-in-Class status through their excellence in meeting and overcoming internal or market pressures. The framework serves as a roadmap for non-Best-in-Class firms to duplicate the strategies enforced and capabilities developed by Best-in-Class firms to improve their service performance (Table 4).

Table 4: The Best-in-Class PACE Framework

Pressures	Actions	Capabilities	Enablers
▪ Need to drive workforce utilization and productivity	▪ Provide technicians with better visibility into work order information and resource availability ▪ Develop real-time visibility into field assets ▪ Workflow and process mapping of for better work order management ▪ Improve forecasting of and planning for future demand	▪ Automated creation of service schedules ▪ Dynamic creation of service schedules as and when work order is created ▪ Technicians made aware of next task either during or upon completion of current task ▪ Centralized scheduling of all service resources ▪ Frequent (real-time or near real-time) capture and measurement of service performance	▪ Mobile Field Service Application ▪ Service Management within built Scheduling Application ▪ GPS-Enabled Vehicle Tracking ▪ Dynamic Scheduling ▪ Resource Planning ▪ Intelligent Routing ▪ Technician ability/access to: - work information and schedules - modify service status and schedules ▪ Customer ability/access to: - create service tickets - technician location/status/estimated time of arrival

Source: Aberdeen Group, November 2009

Best-in-Class Strategies

To further battle the pressures highlighted in Figure 2, Best-in-Class companies are developing a strategy around three major areas to compliment any investments made in technology for resource management and optimization: visibility, process mapping, and planning (Figure 3).

Figure 3: Responding to the Market Pressures

Percentage of Respondents, n=163
Source: Aberdeen Group, November 2009

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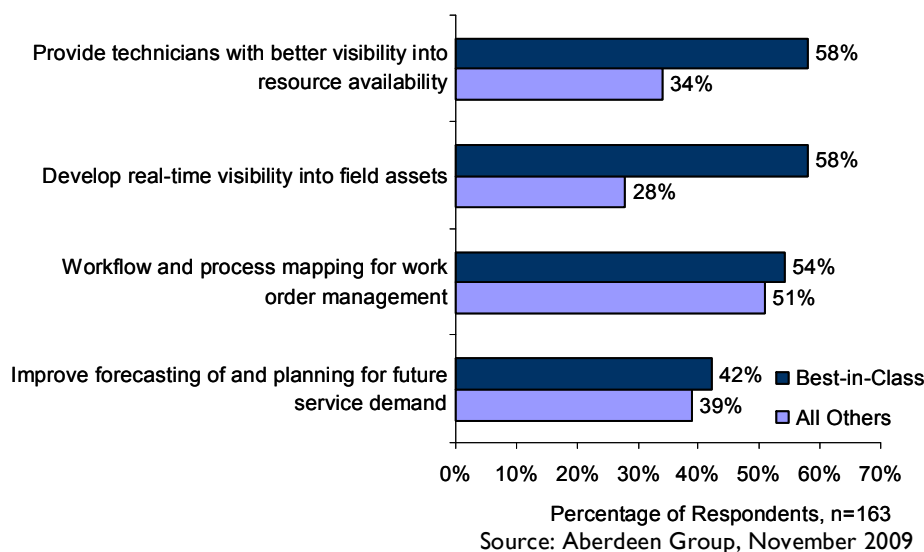
Visibility. Best-in-Class respondents are looking to improve visibility across the entire organization into service attributes and performance. In the field, these organizations are striving to empower their technicians with real-time access to information that is vital to service task completion without constant back and forth communication and confirmation with the home office. Visibility into part levels, stocking locations, customer site information, and customer history enables the technician to not only be at the required site when he or she is expected to, but also to complete the task at hand on the first visit. To ensure that the technician has real-time access to accurate information, Best-in-Class organizations are also looking to improve their visibility into the location, capacity and status of their field assets so as to aid any further investments in scheduling. Inaccurate or incomplete information fed into a scheduling algorithm will only yield incomplete results.

Process mapping. With appropriate visibility into service resources, more than 50% of Best-in-Class companies are looking to strip down and map out their entire service delivery process to ensure the uninterrupted flow of the service work order from the time it leaves the customer, is verified across back-end systems and scheduled, to when it reaches the hand of the service technician or crew for completion, and ultimately to when it is reconciled with SLA and billing information upon closure. A well mapped process can highlight opportunities where resources are needed for exception handling or where adjustments need be made to ensure efficient service delivery.

Planning. While most scheduling deals primarily with execution on a day-to-day or hour-to-hour basis, the overall efficacy of scheduling processes and technology can be magnified with better planning and forecasting around potential service demand and the resources needed to meet that demand. With a good grasp on seasonal, regional or other variances in service demand, the service organization can be proactive in adjusting service resource capacity to meet those variances. Ultimately, it all comes down to execution, but effective planning as prioritized by 42% of the Best-in-Class can greatly ensure maximum returns from effective execution.

"A number of current strategic actions have proven to be successful in driving the productivity / utilization of our workforce. Mobile task automation, metrics tracking and assessment, updated service information at hand, and parts availability have all proven integral in driving the productivity of our workforce."

~ Director, Field Service, Mid-Size North American Medical Devices Organization

Aberdeen Insights — Outsourced Technician Scheduling

There are numerous challenges associated with the scheduling of organizational resources, some that can be magnified when trying to schedule a workforce that is comprised of both internal and third-party workers. Yet, 19% of all dispatches are handled by third-party organizations and 56% of organizations that leverage third-parties indicate that they are responsible for scheduling the entire workforce.

The major reason to oversee the scheduling of the entire workforce is to allow the third-party to fill in for skill- or geography-based coverage gaps or for spikes in service demand, while continuing to maintain control of overall service performance. This ensures the delivery of a consistent service experience to the end customer, regardless of whether the technician is a direct or third-party employee.

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Chapter Two:
Benchmarking Requirements for Success

The success of all initiatives and programs adopted in support of effective service delivery and customer management ultimately depends on the supporting cast of organizational capabilities and processes in place. The identification of these vital capabilities, specifically around the capture, availability and management of service information, 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 — a&o systems+services UK Limited

a&o systems+services UK Limited (a&o) is part of a large European group that delivers IT infrastructure services on behalf of organizations such as HP, Fujitsu and HCL; these organizations essentially outsource the local in-country leveraged service responsibilities to a&o. The company, which generates annual revenue (turnover) of £45m, currently employs over 300 technicians who are usually dispatched for break/fix, warranty, maintenance and installation tasks.

With its focus on volume-based IT services delivered through a mobile workforce, a&o caters to a very price-sensitive customer base and is under constant pressure to cut costs year over year, to deliver these savings to the customer, and to continue to deliver profitability. When the company was spun off by EDS nearly three years ago, the company's leadership decided to approach its goals by wrapping high quality processes around best-of-breed workforce management solutions. These investments in technology were aimed at minimizing and even eliminating the level of manual interaction and intervention so as to weed out inefficiencies to take out cost, improve quality, and enhance the overall customer experience. Process inefficiencies had, at that time, seeped in through the company's existing manual scheduling practices.

As a result, a&o invested in a comprehensive workforce management solution comprised of a dynamic scheduling engine and a mobile field service solution. The combined solution enabled the real-time scheduling of service work orders, which are then instantly made available to workers in the field on their mobile devices. The scheduling engine relies on a number of pre-existing criteria such as SLA Covenants, parts availability, work order priority or technician location as enabled by GPS tracking. From a parts perspective, the scheduling tool is tightly integrated with parts planning and logistics so as to enable the direct shipment of service parts to drop boxes near customer sites to be met by technicians en route.

continued

Fast Facts

√ 38% of Best-in-Class organizations create schedules dynamically as opposed to 23% of Laggards

√ 12% of Best-in-Class organizations leverage manually created paper-based schedules when compared to 32% of all other organizations

√ 23% of Best-in-Class organizations leverage stand-alone dynamic scheduling engines compared to 13% of all other organizations

√ 12% average workforce utilization improvement seen across all organizations since the use of scheduling solutions

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Case Study — a&o systems+services UK Limited

To gauge the success of its scheduling endeavors, a&o religiously monitors customer satisfaction. Customer satisfaction is more than just a mere metric for the organization. In fact a&o's management has made significant investments in training and educating all service agents on the vitality of customer care. In addition, a bonus for the entire organization is contingent on customer satisfaction.

As a combined result of all these investments, a&o has been able to see Best-in-Class levels of customer satisfaction as measured through the Net Promoter Score. Seventy-five percent (75%) of customers rate them as a 9 or 10 in the 10-point NPS scale resulting in a nomination for the prestigious UK National Customer Service award for Field Services. From a productivity point-of-view, the organization has been able to display engineer utilization rates of 82% to 83% with engineers completing an average five jobs a day and despite completing 130,000+ service events annually, the company boasts a 96.8% level of SLA compliance. The high level of compliance has minimized penalty-related outlays and further enhanced cost savings experienced from the removal of dispatch and call center resources. Dispatch resources are now primarily utilized for exception or jeopardy management.

Owing to improved resource management and scheduling, the company is also able to aggressively price its service offerings to the extent that it invariably finds itself extremely competitively positioned against other bidders and is thus able to drive additional service-related business. To further enhance these cost and pricing benefits and to continue to improve the overall customer experience, a&o is looking to further enhance the level of automation in its ticket creation and scheduling process while investing in customer portals to increase customer access and involvement.

"Our new system allows us to differentiate ourselves as it injects a level of professionalism that our customers are very impressed with."

~ Brian Wathen,
Client Services Director,
a&o systems+services UK Ltd

Competitive Assessment

Best-in-Class service firms, as determined by their performance in key indicators, exhibit several of the capabilities highlighted in Table 5 that fall into the five categories of Aberdeen's Competitive Framework: (1) **process** (workflows for the lifecycle of the service work order/project); (2) **organization** (corporate focus on leadership, oversight and accountability for service delivery performance); (3) **knowledge management** (making asset and service data available to stakeholders that can act on the information to impact profitability); (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 5: The Competitive Framework

	Best-in-Class	Average	Laggards
Process	Automated schedule creation based on pre-determined criteria (dynamic or batch-based)		
	54%	36%	35%
	Technician made aware of next task prior to or upon completion of current task		
	46%	33%	36%
	Schedules created dynamically (as and when a ticket is logged)		
	38%	34%	23%
Organization	Centralized Scheduling of Service Resources		
	62%	48%	39%
	Senior Executive in Place with Visibility into and Accountability for Service Performance		
	50%	21%	16%
Knowledge	Technicians have field-based access to service schedules and work information and can update status and make schedule changes in the field		
	58%	35%	35%
	Customers have access to portals to create own service tickets		
	50%	44%	19%
Technology	Resource management technology currently in use:		
	▪ 42% mobile field service ▪ 38% service management systems with embedded scheduling ▪ 23% dynamic scheduling application ▪ 23% resource planning application	▪ 33% mobile field service ▪ 33% service management systems with embedded scheduling ▪ 12% dynamic scheduling application ▪ 13% resource planning application	▪ 16% mobile field service ▪ 32% service management systems with embedded scheduling ▪ 13% dynamic scheduling application ▪ 12% resource planning application
Performance	Frequent (real-time/near real-time) capture and measurement of service performance		
	65%	51%	48%

Source: Aberdeen Group, November 2009

Capabilities and Enablers

The Competitive Framework (Table 5) highlights that Best-in-Class performance isn't predicated on excellence in one of the support categories. Best-in-Class organizations exhibit a comprehensive focus on all of the following support structures to strengthen planned strategic actions (Figure 3). In the case of service scheduling, these capabilities essentially dictate the level of return that can be experienced from investments in optimization solutions.

Process

Optimization of service work schedules is often linked to an algorithm that works as the background and publishes perfect schedules based on the criteria that are fed into the solution. While the ability of the algorithm to outperform a manual scheduler, in terms of filtering through and accounting for large volumes of resource-specific data, isn't in question, the algorithm's results are only as good as the inputs that are fed into the system. Therefore, true optimization is really contingent on the processes that governs the flow of data that is fed into and returned from the scheduling algorithm.

Best-in-Class organizations are already taking strategic actions to map out and solidify the processes that govern the lifecycle of the service work order, whether it be for a simple repair task or for a complex service project. In the lifecycle of the service task, there are three key areas where the Best-in-Class are differentiating themselves from the rest of the field.

Schedule Creation

At the initial stage of schedule creation, Best-in-Class companies are more akin to rely on automated scheduling (whether dynamic or batch-based) so as to reduce the probability of scheduling errors. Non Best-in-Class organizations are nearly three times as likely to rely on paper-based schedules that are not dynamic and cannot account for adjustments that need to be made (Table 6). Changes that are eventually made on paper require a greater amount of time to ensure the availability of resources and to understand the impact of a specific change on other projects and resources. Not to mention, the manual process increases the probability of errors in scheduling.

"With our optimized scheduling solution, we were able to see a 4% to 5% jump in SLA adherence overnight."

~ Brian Wathen,
Client Services Director,
a&o systems+services UK Ltd

Table 6: Automated versus Manual

Scheduling Creation Method	Percentage of Firms	
	Best-in-Class	All Others
Automated scheduling based on pre-established criteria (automatically developed on ticket creation)	31%	23%
Automated scheduling (batch-based at specific points of time)	23%	13%

Scheduling Creation Method	Percentage of Firms	
	Best-in-Class	All Others
Manual input in application (Gantt chart/schedule board)	31%	31%
Manual creation (Paper-based)	12%	32%

Source: Aberdeen Group, November 2009

Scheduling Frequency

As far as the creation of schedules is concerned, nearly 40% of the Best-in-Class companies automatically update their schedules as and when new work orders occur while taking other resource criteria into account. All of this happens in real-time. While the frequency of scheduling tends to be similar across the Best-in-Class and all other firms, the latter show a slight lean towards less frequent scheduling as evidenced by 19% actually running a new schedule batch after a week or longer when compared to the Best-in-Class (Table 7).

Table 7: Frequency of Scheduling

Scheduling Creation Frequency	Percentage of Firms	
	Best-in-Class	All Others
Dynamic (In Real-time as task is completed)	38%	34%
Four times a day	8%	8%
Two times a day	4%	5%
Once Daily	27%	25%
Once Every Two to Four Days	8%	7%
Once a Week or Longer	8%	19%

Source: Aberdeen Group, November 2009

While real-time scheduling might not be needed for all, the increased scheduling frequency reflects a more dynamic scheduling environment that can make adjustments on the fly so as to account for changes in the scheduling ecosystem (resource availability, technician status, customer status etc.) and ensure higher levels of resource utilization. A last minute customer schedule change may not be taken into account in a weekly or monthly schedule resulting in an unnecessary site visit. In fact, organizations that schedule dynamically report higher levels (79% versus 61%) of workforce utilization when compared to those that schedule on a weekly basis.

Table 8: Scheduling Criteria

Short-Duration Work	Complex Work
Currently Leveraged by Best-in-Class (Primary Criteria) 1. Nature/Priority of Service Work 2. Technician Skills/Qualifications 3. Location of Technician 4. Technician Capacity/Workload 5. SLA Requirements	**Currently Leveraged by Best-in-Class (Primary Criteria)** 1. Technician Skills 2. Geographic Coverage of Technician 3. Technician Capacity/Workload 4. Technician Availability 5. Completion of Pre requisites and Co requisites
Currently Leveraged by Best-in-Class (Secondary Criteria) 6. Technician Capacity/Workload 7. Overtime considerations 8. Customer preference for technicians 9. Parts available to technician (In truck, en route, or customer site) 10. Customer schedule/availability	**Currently Leveraged by Best-in-Class (Secondary Criteria)** 6. Parts availability 7. Technician workload 8. Technician familiarity with project team 9. Customer preference for technician 10. Total Cost

Source: Aberdeen Group, November 2009

In developing these dynamic schedules, Best-in-Class organizations are relying on a number of criteria to ensure that the right technician is available for the particular service job. With regards to short-duration repair or service work, the assignment of the right technician is contingent on a number of factors such as priority of work, technician capacity, SLA requirements and location of the technician. The incorporation of one factor in isolation without consideration for the others will yield sub optimal results. For example, while a technician might be the closest to the next job, he/she might have just started to work on the current job and would take significantly longer to get to the next job. Therefore, looking at location in isolation doesn't necessarily ensure that the job gets done. Taking it a step further, if the technician doesn't have the right skill set, it doesn't matter how quickly he or she gets to the customer site.

In addition to these primary criteria, Best-in-Class organizations are incorporating customer preferences into their scheduling practices so as to be able to accommodate last minute customer changes and other preferences to ensure that service occurs when it is convenient for the customer. Part availability also falls under some of the secondary criteria emphasized by Best-in-Class in workforce scheduling. This is of vital importance given the role that part availability plays in supporting first-time fix.

From a complex work perspective, the primary criteria used by the Best-in-Class are similar to those in simple work with the exception of the completion of prerequisites and co-requisites, a factor unique to the

"The single scheduling criteria that is most vital for our scheduling processes is visibility into technician availability."

~ Director,
Large North American
Industrial Equipment
Manufacturer

complex work environment. Essentially, it is of no value to schedule a technician to complete section C of a particular project, if the work on section C cannot be started since work on sections A and B is incomplete. Similarly if two pieces need to be worked on simultaneously to ensure progress to the next stage, then the desired result will not be achieved unless resources are scheduled to ensure the simultaneous completion of both pieces.

Schedule Availability to Technicians

Once scheduling batches are run, based on pre-established criteria, Best-in-Class organizations are actively looking to ensure that information on the next task is quickly made available to the technician out in the field. Forty-six percent (46%) of Best-in-Class organizations indicate that they make their technicians aware of their next task during work on the preceding task or immediately upon task completion. This is matched by 33% of all other firms who prefer to make their technicians aware of tasks at fixed points throughout the day. The frequent and real-time distribution of tasks to service technicians is enabled via mobile field service applications for 42% of Best-in-Class companies as opposed to 27% for all other firms. A quarter of all other firms actually have their technicians pick up their schedules from the office at the beginning of the day/week as opposed to 12% of Best-in-Class companies.

Knowledge Management

Technicians at Best-in-Class organizations aren't only receiving work order information in real-time, but they are also provided with the field-base capability to continuously update their work status, estimated time of arrival and completion which is fed back into the scheduling system. Fifty-eight percent (58%) of Best-in-Class organizations indicate that they provide their technicians with this capability in the field compared to 35% of all other organizations. Twenty-seven percent (27%) of Best-in-Class organizations are also allowing their technicians to electronically update their customers on any change in status or time of arrival, to ensure that the customer is well aware of when service work will actually take place.

On the theme of customer involvement, it was highlighted earlier how Best-in-Class firms are raising the level of customer input in scheduling to ensure a better customer experience. The incorporation of customer preferences into scheduling algorithms and processes is made possible by raising the level of participation enjoyed by customers in the management of resources. For instance, 50% of Best-in-Class companies indicate that their customers can automatically create service tickets as opposed to 35% of all other organizations. Thirty-eight percent (38%) of Best-in-Class organizations also report that their customers can directly order service parts as needed and another 31% indicate that customers receive alerts on email or SMS to changes in service technician status or estimated time of service. That sort of awareness and information ultimately ensures that the customer is available at the time of service, so that a technician or crew visit isn't wasted

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owing to customer non availability. Looking forward, Best-in-Class organizations are aiming to provider customers with portals to increase their level of access to service technician status. Twenty-three percent (23%) of Best-in-Class organizations are actively looking to introduce these portals, thereby transitioning from a more expensive push outreach model to one that is more cost effective.

Technology

The preceding sections have touched upon a number of technology solutions that are required to support the optimized scheduling processes that Best-in-Class companies rely on. With regards to scheduling, there are a number of applications that are being leveraged by the Best-in-Class, ranging from those embedded in broader service management solutions to stand-alone dynamic scheduling solutions. While adoption rates for stand-alone dynamic solutions are still only at 23%, Best-in-Class firms are nearly two times as likely to have these in place. Data indicates that the preference is for dynamic applications tied to broader service management suites, which 38% of the Best-in-Class have in place. These firms are the early adopters of shift planning tools (also known as rostering applications) that can tie in with overall scheduling tools to effectively manage project-based resources. They are also taking a stake in intelligent routing applications that add to the utilization benefits of scheduling tools by providing technicians with optimal routes to their destinations.

"Two initiatives have driven productivity over the past few years. We instituted a management control report which gives us a daily snapshot of the techs previous day metrics and productivity. Also, the other major factor was implementing GPS in our service vans. This gives us the indisputable visibility to when our technicians are starting and ending their day, stops and durations of stops during the course of day, and their routing of service calls. Currently our techs route their own calls."

~ Director - Field Service,
Large North American Retail
Organization

Table 9: Scheduling Tools in Place

Solution	Percentage of Firms Reporting Solution in Place	
	Best-in-Class	**All Others**
Mobile Field Service	42%	27%
Service Management Solution with Scheduling Functionality	38%	33%
Dispatch Management	31%	17%
GPS-Based Vehicle Tracking	31%	17%
Scheduling Application (Non-dynamic)	31%	14%
Resource Planning Application	23%	16%
Dynamic Scheduling Application	23%	13%
Rostering / Shift Planning	15%	10%
Demand Forecasting	15%	9%
Intelligent Routing Application	15%	9%

Source: Aberdeen Group, November 2009

As noted in the section on scheduling processes, Best-in-Class firms are actively empowering their field technicians with mobile tools, a fact that is reflected in their use of mobile field service applications. Only 27% of non

Best-in-Class firms are currently leveraging mobile tools to support their agents in the field versus 42% of Best-in-Class organizations.

Some of the performance management, oversight, and planning capabilities that are needed to support the Best-in-Class strategic actions - as highlighted previously in Figure 3 - are enabled by the use of forecasting and planning applications. While adoption rates are still on the lower side, Best-in-Class organizations are nearly 50% more likely than all others to rely on resource planning tools to complement the execution capabilities of their scheduling applications.

Looking forward, the big focus for the Best-in-Class is on these planning and forecasting applications as reflected by 23% of firms evaluating these tools in the next 12 months. A similar proportion of Best-in-Class firms are also evaluating the dynamic optimization tools that deliver real-time scheduling capabilities.

In the selection of scheduling solutions, evaluating firms are looking at a variety of criteria to determine whether a solution is the right fit. Of most importance is the ability of the solution to manage complex and short-duration service tasks. With 64% of firms indicating they perform both types of tasks and leverage the same workforce to effectively deliver both kinds of service, this has become a vital feature in the selection of a scheduling solution. Other criteria such as cost, ROI and integration are similar to those cited for the selection of most service management solutions. Integration with scheduling becomes important especially with regards to the seamless tie in between scheduling and work order management solutions on the back end, and between scheduling and mobility and asset tracking out in the field.

Organization

Investments in endeavors such as process mapping and in technology to support efficient delivery processes are only enabled in service organizations that are led by executives who have visibility into and responsibility for service profits. Service must have representation at the executive table to ensure its viability as key organizational group and not one that is immediately looked at as an expendable area of business when the going gets rough. One-half of Best-in-Class firms, compared to 19% of all others, indicate they have service representation at the executive level and that these executives are responsible for and have on-demand visibility into service performance.

In the realm of scheduling, these service executives are beginning to focus on centralizing scheduling operations and resource management. Essentially there is a shift away from regional scheduling of resources to a centralized management structure that can analyze the entire service operation and determine the optimal scheduling strategy. Sixty-two percent (62%) of Best-in-Class organizations have a centralized scheduling strategy as opposed to 42% of all other firms - whereas only 38% of Best-in-Class organizations have a regional strategy. Looking ahead, nearly 30% of the top organizations

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are looking at incorporating a centralized resource pooling and scheduling strategy as opposed to 8% that are evaluating one that is regional.

Performance Management

For Laggard and Industry Average organizations that are struggling to receive executive service representation, an elixir presents itself in the form of frequent and consistent performance measurement. Just as cost, productivity and profitability improvements are needed to ensure a required return on a technology investment, so too is a favorable service P&L statement needed to convince the executive branch of the organization of the returns on any investment in overall service. Therefore it isn't surprising that nearly 65% of Best-in-Class organizations are actively and frequently measuring service performance metrics as opposed to 50% of all others.

"The measurement of our KPIs is an extremely important tool for us in running the business. Furthermore these [KPIs] are disseminated through out the organization and at every level. We believe giving people their results whether it is at the individual, team or zone levels, drives the behavior we want, as people strive to achieve the numbers."

~ Director - Field Service,
Large North American Retail
Organization

Aberdeen Insights — ROI from Scheduling

Specific to the use and evaluation of scheduling solutions, responding organizations indicate that improvements in the following metrics are key to the development of a ROI case: customer satisfaction/retention (57%), mean time to repair (51%), total service cost (48%), workforce utilization (45%), and first-time fix (45%). The selection of these metrics mirrors the key pressures impacting these organizations from a resource management point-of-view.

Table 10: Returns from Optimized Scheduling

Metric	Avg. Change since the Use of Scheduling Solution
Mean Time to Repair	-8%
Customer Satisfaction	11%
First-time Fix	10%
Total Service Cost	-6%
Workforce Utilization	12%

Source: Aberdeen Group, November 2009

Survey respondents indicate that since the use of optimization technology, they have seen significant improvements in each one of these key metrics. For instance, organizations report a 12% improvement in workforce utilization and a 6% decrease in service costs from the use of optimization technology. These improvements, while representing a general average, are sure to help build a better case for investment in optimization technology.

In addition to building a case for service, frequent performance measurement also enables the service organization to improve:

- **Schedule execution.** Thirty-one percent (31%) of Best-in-Class organizations indicate that they leverage actual performance data to evaluate the efficacy of established scheduling criteria. As such, these organizations can monitor the impact of changes in scheduling processes on KPIs to determine the optimal blend of inputs to be fed into their scheduling systems. Only 17% of all other organizations currently validate the efficacy of scheduling parameters with actual results

- **Incentives and technician compensation.** Best-in-Class organizations are relying on a combination of on-time performance metrics, compliance with pre-established schedules and customer feedback to determine technician or team bonuses. Nearly 30% of these firms, compared to 16% of all others indicate that technician bonus is computed on the basis of customer feedback and on-time performance. For example, a&o systems+services UK Limited (Case Study) actively bases its entire bonus structure on the customer satisfaction results captured through surveys and the Net Promoter Score.

- **Planning.** Nearly 50% of Best-in-Class organizations rely on the capture of service performance information to evaluate and adjust strategic plans and forecasts for the service organization. Only 28% of all other organizations rely on their actual performance to forecast future growth and resource needs. Best-in-Class organizations are also 25% more likely than all others to leverage current performance data to determine the efficacy of current resource levels and map out future resource needs.

"In the next 12 months we must provide greater visibility into pertinent data in real-time to all parties in order to meet customer needs/expectations."

~ John Schellenberg,
Logistics Manager,
GBE

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Chapter Three:
Required Actions

Whether a company is trying to move its performance in service resource optimization from Laggard to Industry Average, or Industry Average to Best-in-Class, the actions highlighted below will help spur the necessary performance improvements. These actions are sequenced so as to provide an organization at the beginning of its resource optimization journey with a scalable roadmap towards eventually attaining Best-in-Class performance.

Laggard Steps to Success

- **Map the entire service delivery process.** Whether developing new scheduling processes or retooling existing processes, it is important to map out the entire lifecycle of a service ticket, from creation to scheduling to dispatch and finally to completion. A map of the overall processes and the resources that are tied to every node of the process will assist the organization in understanding which component of the entire processes needs the greatest amount of attention and investment. While Best-in-Class companies have shown excellence in the delivery of service, 54% of these firms continue to map out and evaluate the lifecycle of the service ticket so as to weed out inefficiencies in the system.

- **Involve the right stakeholders in the development of the process.** It is vital to ensure that all impacted stakeholders are involved in the development on the optimal service delivery process. For beginners, a service executive with oversight of and accountability for service-related profitability can bring in a comprehensive view of the desired result of a process mapping, ranging from operational, financial and customer-facing components. Only 16% of Laggard organizations currently have such a leader in place as opposed to 50% of the Best-in-Class. Other stakeholders that would play an integral role are the customer service representatives, dispatchers, technicians and IT personnel and a lack of involvement of any one of these parties can greatly compromise the optimal process.

- **Raise visibility.** Best-in-Class companies are actively taking steps to raise their real-time visibility into the location, status and capacity of their field resources (Figure 3). Only 26% of Laggards consider this to be a strategic action in addressing resource management and customer satisfaction pressures. The efficacy of an optimized scheduling process is greatly reduced if there isn't sufficient visibility into the resources that need to be scheduled. An algorithm that runs on incomplete or inaccurate data will only yield incomplete results

- **Centralize the scheduling process.** In the process mapping stage, the presence of a service executive will also help in

Fast Facts

√ 16% of Laggards have a service executive in place with visibility into and accountability for service performance, compared to 50% of Best-in-Class organizations

√ 25% of Laggards are looking to centralize their scheduling operations in the next 12 to 24 months, while 62% of Best-in-Class organizations follow a centralized scheduling model

√ 20% of Industry Average organizations run schedule batches after a week or longer compared to 8% of the Best-in-Class

√ 37% of Industry Average organizations are looking to strengthen their demand forecasting and resource planning capabilities in the next 12 months

√ 35% of Best-in-Class organizations are looking to increase their technicians' parts management capabilities to boost service efficiency levels

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centralizing the scheduling process. Centralization is also made possible with greater visibility into service resources. Once the scheduling organization has visibility into the entire pool of resources, and visibility into service needs and demand on an overall scale, they can allocate these resources accordingly to ensure improved performance. Thirty-nine percent (39%) of Laggards currently follow a centralized scheduling model, compared to 62% of the Best-in-Class. However, 25% of Laggards are looking to centralize in the next 12 to 24 months.

- **Do away with paper-based and manual scheduling.** With a wider range of resources and customer needs at stake in a centralized scheduling operation, the margin for error is greatly reduced as any mistake in the overall process is magnified on a larger scale. As such, to supplement the organizational shift, Laggard organizations should consider the automation of scheduling process. Currently a third of these organizations rely on manually created paper-based schedules, as compared to 12% of the Best-in-Class.

Industry Average Steps to Success

- **Increase frequency of schedule batches.** While Industry Average organizations are almost on par with the Best-in-Class with regards to dynamically scheduling service technicians, they are also a lot more likely to rely on longer timeframes to process schedule batches. Twenty percent (20%) of these organizations run schedules once a week or longer, compared to 8% of the Best-in-Class.

- **Consider simulation models and technologies to analyze process improvements prior to actual implementation.** Organizations can now leverage simulation models and technology to virtually envision the impact of any scheduling overhauls on actual performance. The results from scheduling simulations can assist the organization in forecasting returns that can be had from scheduling investments. The results can also help the organization identify white spaces in improvement plans so as to enable the development of a true Best-in-Class scheduling process.

- **Empower your field workers. Integrate them into the scheduling process.** Only 35% of Industry Average firms are currently looking to provide their field workers with improved visibility into work order and scheduling information, as compared to 58% of the Best-in-Class. Real-time updates from the field on status and estimated completion/arrival times can greatly increase the efficacy of the overall scheduling process, whether dynamic or not. With field-based information in hand, necessary adjustments can be made to reallocate resources so as to meet customer or contractual requirements.

- **Integrate scheduling workflows with other automation systems.** A scheduling algorithm deployed in isolation will not

"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 Company

deliver the desired ROI if it isn't tightly integrated with other work order management and mobile systems. The recommendation above talks about the interplay between scheduling and mobile field service systems to ensure that optimized scheduling information is accurate and is ultimately acted upon. With integration in the field and on the back-end, ticket closures and follow ups can automatically be accounted for and reconciled with contract management, billing or other customer management systems. Without the required level of integration, there would be a significant delay in the closure of the work order loop, impacting financial, operational and customer-facing metrics.

- **Improve planning and forecasting capabilities.** Thirty-seven percent (37%) of Industry Average firms are looking to bolster their forecasting and planning capabilities to augment the execution of scheduling processes. This starts with an improved frequency of service performance. With better insight into service performance levels, the organization can make strategic decisions regarding service resource allocation levels in order to proactively meet spikes and dips in service demand and ease the overall burden on service resources. As highlighted earlier, Best-in-Class companies are 25% more likely than their Industry Average and Laggard counterparts to rely on a high degree of forecasting and planning to determine the optimal levels of service resources.

Best-in-Class Steps to Success

- **Get a better grasp of penalties.** While Best-in-Class organizations report higher levels of compliance with customer or contractual obligations, 31% indicate that they are currently unaware of the total penalties that were enforced over the last 12 months. However minute this number may be, visibility into that value or the probability of the occurrence of a penalty can impact scheduling criteria so as to minimize service-related costs.

- **Don't part with your parts.** To raise first-time fix rates to 90%+, Best-in-Class companies need to raise the level of importance given to parts availability in the overall hierarchy of scheduling inputs (Table 8). Nearly 30% of these organizations are looking at accomplishing this in the next 12 months with 35% looking to increase their technicians' access and visibility to parts availability and other part management capabilities.

- **Continue to raise customer involvement.** While Laggard organizations need to ensure that they involve all internal stakeholders in the development of scheduling processes, Best-in-Class organizations need to continue to raise the involvement of perhaps the most vital stakeholder in the overall process: the customer. While these organizations are ahead of all others in getting the customer involved in scheduling, 23% are looking to

"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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improve customer access to portals that highlight technician
availability, location and allow for customer-based updates.

Summary Insights — Resource Reallocation

By design, organizations look to adopt scheduling tools to reduce the
reliance on manual data entry, order creation, schedule and dispatch so
as to reduce the possibility of errors and improve accountability for all
variables that are deemed important in resource scheduling. As such,
while we have seen the average number of service technicians increase
across all responding organizations, there has been a drop in total
dispatchers. Service organizations keep tabs on the overall technician-to-
dispatcher ratio so as to measure the value of their scheduling solutions.
A higher ratio inherently means that a single dispatcher is able to assist
the needs of a larger number of technicians, inferring that the scheduling
system adopted is actually performing its task while allowing the
dispatcher to cater to exception or jeopardy management.

In the respondent base for this research project, the technician to
dispatcher ratio has shifted from 15:1 in 2008 to 18:1 this year.
Therefore while these organizations are becoming more efficient, they
are inherently cutting dispatch resources, in adherence with what is being
felt throughout the economy. However, there is a significant opportunity
for these resources to be trained and reallocated in other aspects of the
service business so as to ensure that the 6% improvement in service
costs from the use of optimization tools is achieved due to improved
resource utilization and not from morale dampening workforce layoffs
and cutbacks.

Reinvestment of service resources also reinforces the importance of
change management that needs to be enabled with an investment in
scheduling process changes or in optimization technology. As
organizations are battling to boost resource utilization and overall
compliance rates, the impact of effective change management cannot be
programmed into a scheduling algorithm. Therefore organizations that
are Best-in-Class are those that are able to develop the appropriate mix
of process improvements and organizational change as enabled with
executive service leadership, real-time performance measurement and
improved accountability and visibility for service performance across all
levels of the organization. In addition, these organizations are able to
blend both planning and execution capabilities with regards to service
resource optimization and therefore enjoy 50%+ performance advantages
over all others in service efficiency and workforce utilization.

Appendix A:
Research Methodology

Between October and November 2009, Aberdeen examined the use, the experiences, and the intentions of over 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 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 (14%); Vice-President or Director (30%); Manager (35%); and Engineer or Dispatcher (5%).

- *Industry:* The following industries had the largest representation in the study: Industrial Equipment or Product Manufacturing (15%); Telecommunications (11%); IT Services (11%); Consumer Electronics and Goods (10%); Utilities and Mining, Oil and Gas (9%); and Construction/Engineering Services (7%).

- *Geography:* The majority of respondents (56%) were from North America. Remaining respondents were primarily from the Asia-Pacific region (17%) and Europe, Middle East and Africa (26%).

- *Company size:* Thirty-four percent (34%) of respondents were from large enterprises (annual revenues above US $1 billion); 26% were from midsize enterprises (annual revenues between $50 million and $1 billion); and 40% 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); 28% were from midsize service enterprises (field technician headcount between 50 and 500); and 42% of respondents were from small field service businesses (technician headcount less than 50).

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 for both short and long-duration projects

√ 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 11: 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, December 2009

Table 12: 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, December 2009

Table 13: 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, December 2009

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Appendix B:
Related Aberdeen Research

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

- *Trends in Mobile Field Service: Empowering Field Technicians to Deliver Better, Faster Service*; June 2009

- *Service Benchmarking and Measurement: Using Metrics to Drive Customer Satisfaction and Profits*; June 2009

- *Service Workforce and Fleet Management: Driving Utilization with Location Intelligence*; May 2009

- *Workforce Scheduling: Managerial Strategies for Driving Down Costs while Escalating Customer Satisfaction*; May 2009

- *Predict to Prevail: Forecasting and Planning Service Demand in Challenging Times*; December 2008

- *Field Service Scheduling and Routing: A Guide to Service Delivery Excellence*; June 2008

- *Complex Service Work: Scheduling Technicians, Crews, and Physical Resources*; May 2008

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

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