SIMPLE ROUTE PLANNING
VS. SCHEDULE OPTIMIZATION
WHICH IS RIGHT FOR YOUR BUSINESS?

KEY QUESTIONS:

P2

How can optimization of field resources benefit your service organization?

P3

What is a customer intimacy model and is it applicable to my business?

P4

What is the optimum setting for using dynamic scheduling?

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SIMPLE ROUTE PLANNING VS. SCHEDULE OPTIMIZATION
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When Winston Churchill said, "He who fails to plan is planning to fail," he wasn't referring to field service businesses, but it still rings true. Field service organizations understand that efficient route planning is essential to being successful; smart routing is efficient and enables service technicians to become more productive by completing more jobs per day. However, they may be overlooking the added benefits of schedule optimization as an intrinsic part of the solution.

Any organization that needs to manage a mobile workforce—whether it's for product delivery, service staff or service technicians—can benefit from planning software to simplify scheduling, manage workflows and improve the bottom line. So what is it that businesses are trying to automate with scheduling and route planning? We ask this question frequently of field service organizations. There are a lot of products in the marketplace, and they all have a value proposition and price point, but each should also be expected to deliver a certain benefit for the cost.

THE ESSENTIALS OF ROUTE PLANNING

Some businesses simply assign a certain number of jobs to a technician, usually based on geography, or customer visit frequency, and want software that will figure out a route for that technician to finish their assigned work. This kind of routing software has been around for some time, and, in its simplest form, it's something we all use frequently: it is navigation and turn-by-turn directions. This basic form of simple route planning is built into almost every smart phone that has a global positioning system (GPS)-based navigation system. The phone knows where you are located, and it tells you how to get to where you want to go. Sometimes it will give you multiple options. If there are multiple stops to make, you plug in the order of the stops and it will give turn-by-turn directions from Point A to Point B to Point C, and so on. This method uses simple geometry (GPS triangulation) that's built into the device to calculate the current location and how to get to the next destination. More advanced navigation systems can interact with real-time traffic services to suggest the shortest journey from a time or mileage perspective. The variables in this equation are usually the addresses of the locations you want to visit, the time or duration of travel, and the mileage. This is straightforward technology and quite inexpensive, as it's usually included in your phone plan.

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Service organizations don't really have to invest much to receive the benefit of this type of simple route planning. If they have a native mobile application that utilizes the device's GPS and built-in navigation software, they can simply assign jobs to a technician, who can then utilize these technologies to figure how they will manage their day. However, this solution leaves a lot of decisions in the hands of the technician. This self-planning, self-scheduling method is very inefficient: who they choose to visit first and last can have a huge impact on productive time, drive time, overtime, fuel consumption, service level agreement (SLA) compliance, and customer satisfaction. And because management doesn't have any control over the schedule, it literally leaves your success in the hands of the technician.

Essentially, route planning doesn't really "plan" anything because the job order is already predetermined when it is assigned to the technician by the office, or it is left up to the technician to decide which order is best. It may also rely on manual address entry, which has huge potential for errors, as even a one-digit entry mistake can have catastrophic effect on a schedule. Ultimately, this solution will fail when jobs and SLAs are missed, or workloads become inefficient.

OPTIMIZING RESOURCES

Where field service organizations start to see a real payback is when they begin using scheduling software that includes travel calculations as part of the schedule. The jobs assigned to the technician represent the demand, and the scheduling software manages the labor supply. **The scheduling software determines the order and the resource, and considers workload balance, while the route planning software can create the best way to get from one location to the next.** This is a more intelligent, more encompassing planning method that produces a more reliable, scheduled plan. It also takes the subjectivity out of the hands of the technician and puts it back in the hands of management, but it only addresses productivity and cost saving at a cursory level.

One way management has made an effort to track a technician's progress on their assigned jobs is by geofencing their activity throughout the day. If the tech travels too far outside their route, or there is an unreported delay on a route's planned job, a geofence alert informs a dispatcher or team manager of a schedule or route exception. This type of management oversight is frequently met with a fair amount of resistance from field employees. Depending upon the nature of the service work being provided, this kind of monitoring can be counterproductive. But in some industries, particularly consumer or residential service, or perhaps recurring service, geofencing can catch wasted mileage and unproductive use of an expensive fleet vehicle. However, geofencing just nips at the edges of the interaction between the scheduling software and the route that the technician travels.

Some planning software will take into consideration multiple variables to determine an optimized route. The trucking industry has used this kind of route planning software for some time. For instance, a trucker's licensing and

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certifications could be considered for what type of equipment they can operate, how many hours they have driven on a given day, week, or month, and how much additional driving time they can be assigned. In this case, fuel consumption or total drive time can be factored into the optimum route as well. This can be fairly effective if the work that is planned throughout the day is static, or, in other words, is not subject to change. The trucking industry, however, found that this static scheduling and subsequent route planning was only marginally useful for less than full truckload (LTL) scheduling. In this case, the driver could have been re-routed based on incoming pickup orders, since, in shipping, profits are driven by hauling as much freight as possible when the truck is on the road.

The trucking industry only deals with a fraction of the exceptions and disruptions that a field service business deals with. And this is where route planning software starts to be of marginal value compared with a dynamic and often times reactive service business.

MANAGING COMPLEXITY

In a service business, there can be a plethora of skill set considerations for each job. Perhaps a technician or subcontractor is not welcome at a particular customer site, or maybe the technician doesn't have the right training on a given piece of equipment. In simple terms, why send a journeyman to do the work of an apprentice? It is most advantageous for both the customer and the business to send the right resource for the job, based on all the available information at the time the job is assigned to the field, taking into consideration cost, location, capability, and customer expectations.

Another important consideration is the estimated duration of a service call, which is not well known prior to arrival and initial triage of a problem, particularly if it is a break-fix, or an emergency service call. Perhaps technical support has diagnosed the problem well enough to estimate a standard duration for the service event. But duration is frequently unreliable, and it could change significantly based on the technician's observation and on-site diagnosis.

Many service businesses assign work based on a customer intimacy model; for instance, primary, secondary, tertiary technician (or subcontractor), but this model doesn't always hold up. In other industries, particularly when the equipment is highly technical and often sold through distribution, the technician is the face of the company to the customer. Although this should be a consideration for who gets assigned to a job, it shouldn't be the only one. What happens when SLAs are involved and customer commitments might be missed because the primary technician or subcontractor isn't available? Sometimes service businesses assign work based specifically on a geographic boundary or customer preference simply because it's the easiest thing to do, but at a cost to customer satisfaction or SLA compliance. While this can be easy to manage, it is not very efficient. Breaking these barriers can have a real monetary return.

A customer intimacy model is when the technician is the face of the company to the customer

DYNAMIC SCHEDULING

The variability or dynamic nature of a service business manifests itself in other ways. Besides calls sometimes taking longer than estimated, there are also unexpected traffic problems, emergency calls throughout the day, different prioritization of service work, other skills required to fix a given problem, customer commitments, unexpected fleet problems, and, finally, planned maintenance. Whether guaranteed through a contract or mandated as an engineering change order, planned maintenance should be considered so that engineers are fully utilized. All of these variables should be balanced against optimum schedule efficiencies, like reduced total travel time, maximum productivity, minimized fuel expense, and least-cost resource assignment. Having scheduling software that intelligently factors in the best way to assess these variables in a dynamic fashion is a differentiator to efficient service labor management.

While route planning can provide a way to approach this problem at the beginning of a day, the scheduling software becomes the driver in what work is assigned to who, and when. If there is confidence that the 'route' is static and planned with some level of confidence, for instance recurring service, or last mile deliveries, this might be a suitable tool. In an optimum setting, where a service business is dynamically making decisions against all the possible variables, route planning returns a minimum impact on the business. The scheduling software is where the best return on investment lies, and route planning only provides the best way to get to point B from point A.

In an ideal setting, with the mobile technology and workforce planning tools we described earlier in place, and the kind of scheduling software balancing these variables in a dynamic nature, the service business can move to a true drip-feed schedule environment where route planning is completely secondary to the scheduling software used to determine what jobs are assigned to who, and when, at any given point in time. In this scenario, the technician is given his next job only when he has completed his current one, thus leaving the scheduling decision as late as possible in order to maximize the information available. This is a unique capability that is not widely available in the marketplace.

CONCLUSION

The most important part of selecting a successful field service solution for your needs is to plan with your businesses goals in mind. As you start to create a vision of where you want your service business to be, think about the long-term impact of all of the technology on your business from an operations standpoint. Lay out an implementation plan that will fold that technology into the organization as you are ready to absorb it. This paper just focused on planning and scheduling but other variables in the areas of technical support, contract administration, product management, service logistics and reverse logistics are equally important. As it relates to moving your field people against customer demands, perhaps a simple route planning tool is where you want
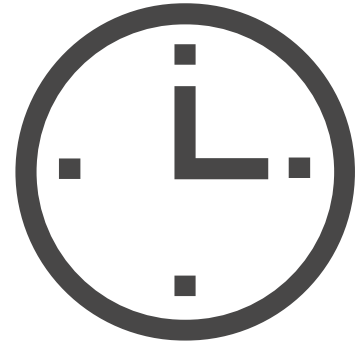
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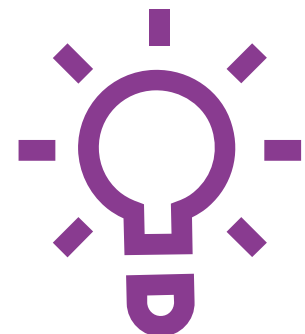
to start, but there may be a better way to significantly change and improve your service delivery by implementing solutions that allow you to get where you want to be. And that planning strategy is your best plan for success.

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