

# The Scheduling Dilemma

## Part I

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In today's business climate many companies are searching for ways to meet the challenges that are being placed on them. The challenges are many: improve delivery performance, reduce production cycle times, reduce costs, and reduce inventories. These challenges all involve the production area of the company, and to address them many companies choose to address how the schedule for production is accomplished. As companies look for solutions to these challenges many have implemented process automation software to make improvements in these core challenges. Too often the outcome of these improvement solutions misses the mark and delivers less than what was promised, and expected by the company when the solution was chosen. Since it is assumed that most of these implementations are done by a team of hard working professionals who have the best interests of the company at heart why does the solution fail to deliver the results? Let's begin the analysis of the problem by looking at the outcomes that are not meeting the expectations.

## **Undesirable Effects**

### **We have late orders to customers.**

Many companies begin the search for improvement based on this undesirable effect. Customers are usually very vocal about missing ship dates. This issue will get a lot of attention at production meetings. When the sales team is pushed to deliver more sales for the business it is very difficult if the promised delivery dates cannot be met.

### **Our scheduling system does not give the most optimum (best) schedule.**

We have to intervene often and there are rush orders and many orders must be expedited through the plant. Many companies struggle with the definition of optimum schedule. Companies that focus on customer satisfaction will say the optimum schedule is the one that gives the customer the delivery date requested. Companies that focus on lowering costs will say the optimum schedule is the one that allows the fewest setups of equipment and the longest runs of product once the equipment is ready. Some companies do not define optimum and the scheduler will move back and forth between these two definitions to put out the current fire.

**Often there are work centers that are overloaded, when other resources have idle time.**

This requires the supervisor to run overtime and displace workers at the same time. This is very frustrating for the supervisor and for the employees who just with scheduling would get their act together and smooth out the schedule.

**The company spends time loading and amending the standard times for the schedule, but still seem to miss the projected complete time.**

It seems that no matter what the standard times are changed to they cannot be met. If the company operated to the times requested by production the products would not be price competitive. If the company operated to the standard times desired by the sales and estimating areas the schedule would never be met.

**The company has spent a lot of money to automate the business scheduling and has not seen a return on the investment.**

Many times the business system that was purchased was not centered on the principle of making scheduling or production more effective. Often the accounting requirements of the company, or the ordering interface requirements of one of the companies largest customers carry more weight in the software selection decision than what will help production. Since neither of these two areas can directly contribute much in the way of increased profit it is very difficult to get any ROI from systems selected to meet these requirements at the expense of production.

## **Core Conflicts**

In working with many companies in their scheduling and production departments I see some repeated conflicts that the scheduler must wrestle with that are the cause of some of the listed undesirable effects. These are conflicts because the scheduler cannot see a way to do both of the things he/she is being asked to do at the same time.

### ***Conflict #1***

<b>Desired Result</b>	<b>Necessary Condition</b>	<b>Conflict</b>
Manage Well	Keep costs low.	Be efficient
	Keep customer happy	Be on time.

In the table above the desired result is what we are trying to achieve, the necessary conditions are those things that must be accomplished to get the desired result, and the conflict forces us to choose between one of two necessary conditions.

If the scheduler wants to manage the department well he/she knows it is necessary to keep costs low and to keep customers happy. There is no disagreement that both these things must be done to truly manage well. The problem arises when it is not possible to do both on the same job or project. How is the priority determined? Who has the authority to determine the priority? Is the priority always given in the same manner? What is the right way to determine

the priority? If the decision is made by another person in the organization the scheduler might be reluctant to make the decision if they do not understand the rules or if the rules are inconsistent. The outcome is the scheduler compromises the two things they know must be met: sometimes we are on time, sometimes we keep costs low, but we do not always do both.

## **Conflict #2**

<b>Desired Result</b>	<b>Necessary Condition</b>	<b>Conflict</b>
Manage Well	Keep costs low	Keep inventory low
	Have short cycle time	Keep inventory on hand.

If the scheduler wants to manage well they know they must keep costs low, but most customers want to continuously improve the time it takes to order, produce and deliver the product or service. Inventory impacts the company's ability to deliver these necessary conditions.

One of the most highly visible areas of costs is inventory. In many companies the scheduler creates demand for inventory based on what jobs or projects are scheduled. Since inventory creates higher costs in storage and material movement the purchaser is under policy restrictions to keep inventory at the lowest possible level, many companies adopting a just in time approach to managing inventories. The customers, however, often request a cycle time that is shorter than that possible if the lead-time of the raw material is factored into the cycle time. The conflict results when the sales team, and often the scheduler, demands material to be available at all times for any job or project that the

customers could possibly demand. The resulting compromise is to focus on just in time inventory until Murphy's Law strikes and causes an important job or project to be late due to lack of inventory. Then the pendulum will shift to have more inventories to protect against Murphy, until the next quarter results show the inventory turns down, cash flow tied up and obsolete inventory on hand. Then it is back to just in time!

**Conflict #3**

<b>Desired Result</b>	<b>Necessary Condition</b>	<b>Conflict</b>
Manage Well	Maintain or grow product margin	Give preference to the items that make the highest contribution.
	Maintain Customer Satisfaction.	Give preference to the items that are late.

If the scheduler wants to manage well they know the company must maintain the margins the company receives on the products and services produced, and they know the company must maintain high levels of customer satisfaction. Many companies have taken improvement programs aimed at focusing the company resources on jobs or projects that have higher contribution margins. They calculate the margins on each job or project and then create a policy to give preference to the ones with the highest margin contribution. This is intended to insure the margins of the company are protected. The scheduler also gets pressure to meet the promised delivery date and there will be occasions where these two policies are in conflict. For the scheduler to meet the promised

delivery date the higher contribution project must wait, but the scheduler has a rule that says the higher contribution project must not wait. How is the conflict resolved? Often the scheduler shifts focus back and forth between satisfying these two conflicting policies and in the long run both margins, and customer satisfaction, is compromised.

### **Core Conflict (C-3)**

From the three Core Conflicts we have reviewed we can look for a root symptom or root cause to the problem and identify the core conflict.

<b>Desired Result</b>	<b>Necessary Condition</b>	<b>Conflict</b>
Manage Well	Improve company performance.	Focus attention on the measurements that result in improvement for the company overall.
	Improve departmental performance.	Focus attention on the measurements that result in improvement in my department.

If the scheduler wants to manage well they understand the results of their actions must result in an improvement in the performance of the company overall. The assumption is that to achieve this improvement in performance there must be a measurable improvement in the performance of their department and of all other departments. The core problem is; sometimes the fix for one department is the

biggest issue facing the next department. If everyone is striving to maximize the performance of each department in isolation then there is no way the overall performance of the company can ever have significant long lasting improvement.

## **The Solution**

As we have seen our problem, why have the improvement projects and system changes made in scheduling not met our expectations, is much deeper than our process or our system itself. Since the problem is more than the process or system, simply changing the process or system will not result in solving the problem. In order to find a solution to our problem we ask three logical questions and address the answers in an action plan. The questions are:

1. What to change?
2. What to change to?
3. How to cause the change?

We know from our analysis the root problem is caused by the way we measure success in the company. If each department has a different measurement for their success there will be no clear plan to make improvements for the entire company. What should be the measurement of success and improvement for the entire company? How does each department and employee interact and support the effort and plan to deliver the improvement? What are the plans and what systems are needed to support these plans? Once we have the answers to these

questions we can begin to eliminate the current undesirable effects we see in the current system. In Part II we will discuss how to get these answers.

Credits:

It's Not Luck

Eli Goldratt