

We Deliver Change!

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The President's Corner

The Future of Asset Management, Part 2

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Strategic Planning. In every plant environment we encounter, we hear the same (legitimate) complaints: "Improving maintenance is important, but we just don't have time. We have 4 major plant initiatives and 5 corporate initiatives, and don't know how many of them are going to get done!" Or, "Everything we do is a 'flavor of the month'. We seem to start lots of stuff, but never finish".

How do you set a plan that is timeless? One that has approvals all the way to the top of the company? How do you assure you have a single initiative instead of 20? **Through the act of strategic planning!**

The product of functional strategic planning is *alignment around a multi-year improvement plan*. To get alignment requires more than a few words in a book. It requires that every level of the organization believes the content of the plan is the most important set of things the company can do with its resources. That means a real and compelling business case for the senior executives. For plant executives it means working on those things which are most practical, which make a difference in daily control of the work and reduction of variance. For the staff functions it means an understanding of the support they must render to enable the plan to be successful.

The elements of the Strategic Plan are these:

1. Benchmarking the function. Where are we today? What are the measures saying?

2. Developing a vision for the future of plant operations. Difficult to do, sometimes requires "Industrial tourism" to see the bigger picture, and using outside help to understand what's possible. This part has to be done right, or the plan will fall apart. Our clients have found the Execution Triangles (Production, Logistics and Asset Healthcare) to be valuable to setting the vision (*see www.samicorp.com for images of these models*).

3. Identify Gaps. Where do we fall short of the vision?

4. Identify Strategies to close gaps. It would be easy to shortcut this task. But one may find that, for instance, a distributed control system may be a strategy that helps with product quality, product mix direction,

faster changeovers, and equipment condition monitoring. So one strategy covers several gaps.

5. Describe Projects to implement strategies. This can get creative, and will be an integrating force. For instance, a planning and scheduling project may be combined with a safety improvement initiative. Preventive maintenance improvement may combine with an ISO calibration standard.

6. Develop the implementation plan. It will require resources, so don't shortcut or lowball what the implementation will require. Remember that training won't create new behaviors. People need to be coached for new behaviors, and measures put in place to determine success.

7. Develop the Business Case. By integrating the initiatives into a single Strategic Plan we can avoid the silliness of double counting for results. Was contractor reduction due to the purchasing initiative or planning and scheduling? Who cares? As long as the goals for contractor reduction were met, and we stayed within the resource guidelines we requested and received approvals for.

8. Create the implementation governance structure. Plant leadership integrates the Strategic Plan into the Annual Planning Cycle, and the entire Managing System is engaged to see that the results of the Strategic Plan have accountabilities built into the entire organization.

Information Management. The good and bad news: as of the end of the last century most plants are now working with an ERP system. Initial results are typically very negative: lots of rejection of the new system as hard to use, can't get reports out. But slowly organizations learn to live with and even like the new systems.



S. Bradley Peterson,
CMRP
SAMI President

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We are a consulting group for industrial organizations working to gain leadership alignment for change, implement strategic asset management, develop advanced maintenance & production programs and create dramatic financial results. Our Mission is to improve our clients' production equipment health, by tapping the desire, creativity and dedication of all plant staff, and our vision is to be the firm consistently chosen by companies serious about making change; because our values of integrity, content knowledge, advanced practices and compassion for the workforce match the values of our clients.

The SAMI Asset Healthcare Triangle; Stage 2: Part 2 Equipment History

By Dave Army, CMRP



What I believe to be a sorely neglected element of Asset Healthcare strategy involves a sound approach to gathering relevant equipment history. After all, how can we identify causes of chronic equipment problems or better still, identify the chronic problems without clear concise documentation of equipment history.

We will assume that Stage 1 enhancements to your work management process included paying careful attention to work order closeout and documentation. Therefore, work order closure ensures that an accurate description of work performed and parts used is captured. With a little bit of effort you can also expect that a preliminary cause determination has been established. Or can you?

Does your CMMS have codes for initial failure cause identification? If so, are they being used? Or is anyone monitoring their usage? It has been my experience that most craftspersons are reluctant to apply failure cause codes to corrective work they have completed. Why is that? First of all, they probably haven't been trained on how to make the appropriate code evaluation. Secondly, they might not possess the skill sets necessary to enter the information into the database. Thirdly, and perhaps most likely, no one has sat down with them and explained how initial failure cause analysis might help and how important it is to developing sound asset healthcare strategies. In most cases we assume that our partners just have to realize the importance of initial failure cause analysis all on their own. If the codes aren't in use, then I suggest that you've some missionary work to do. Maybe the supervisors also need convincing. The important point is that this is a valuable intelligence stream that you cannot afford to pass up.

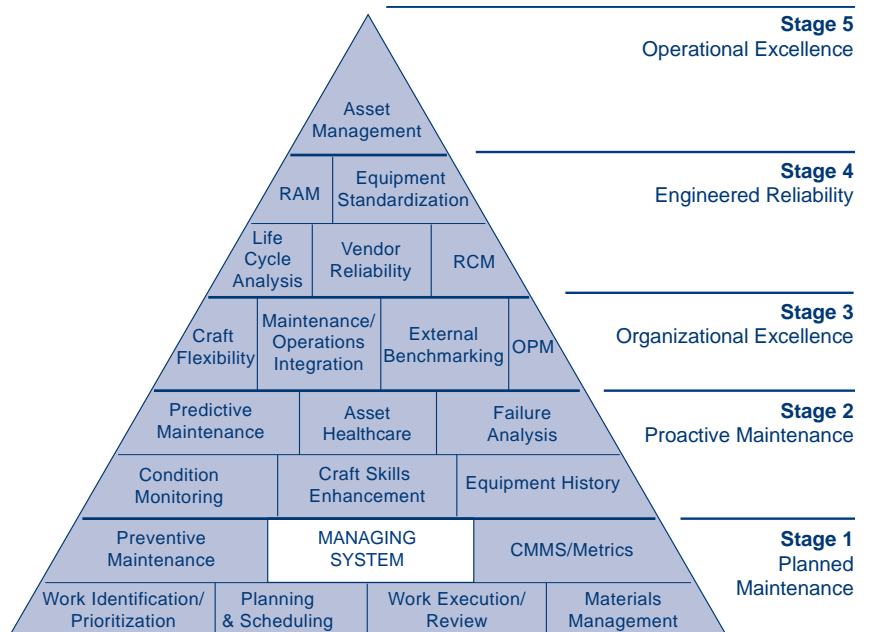
Let's say that good up front information gathering related to equipment history isn't the issue. Then what you do with it is! I can remember way back when Instrumentation Departments kept extremely accurate history on history cards. Some of you may remember back then. In every IE department there was file cabinet after file cabinet full of 3 X 5 or 8-1/2 by 11 file cards for each piece of equipment. After every repair or calibration, the technician would dutifully record as found and as left data. That was the good news. Unfortunately after a unit trip (this was at a power plant) I talked with the technician responsible for calibrating the transmitter that failed, causing the trip. What we found after a review of the calibration data was that the transmitter would drift. No problem for the moment, as the frequency of calibrations would catch and correct the deviation. The bad news was that the setting drift became larger and larger until the transmitter failed prior to next calibration.

Furthermore, now that we had a failure that led to a plant trip, we looked at the calibration records for similar transmitters and found the same type of drifting phenomena. Now call in the engineers for a redesign.

You may now ask, "What's the point"? My point is that

gathered intelligence is no good without intelligence applied to it. You have spent a great deal of time collecting data in the field. This is first hand experiential intelligence on your equipment. Furthermore it has been gathered by individuals who know and care about the equipment. Don't let it sit in you database collecting electrons or whatever. Put it to use.

As we all know, you don't have to worry about the big things. They stick out like a sore thumb and everyone will come running to attend to it. What about the little things? Do you know what your chronic equipment problems are? Are some makes of valves, solenoids, transmitters, relays, etc. giving you more problems than others. Where are you spending the



most money? These are all questions that you should and could have the answers to if you make intelligent use of your equipment history. Make sure that there is solid intelligence gathered in the field, and then work it to your benefit. The resulting reliability improvements will be well worth the investment of your time.

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The SAMI Production Triangle; Stage 1:

Part 1 Production Planning & Scheduling

By Herb Lichtenberg



Once we've identified all the elements needed to produce an order, the next step is to plan and schedule its production and shipment within the time frame specified by the customer. So what's so complicated about that?

Well, it really depends on a number of factors including:

- Stability & predictability of the production process
- Diversity & complexity of the product line
- Agility of the production process
- Capacity utilization
- Lead time competitiveness demanded by the customer & market
- Inventory policy (Raw, WIP, Finished)

This discussion will focus on the first four factors because they are the primary factors that determine the complexity and accuracy of the planning and scheduling process. They also are a factor along with lead time in developing inventory policy and levels needed to fulfill customer needs and support production planning and scheduling.

Stability, Predictability & Planning Horizon: When planning and scheduling production, timing is very important. The timing of raw materials, parts and subassemblies arriving at the proper location for assembly and the product reaching the customer when specified is critical in the planning and scheduling process. The ability to meet these timing requirements is a function of the length of the planning horizon (lead time) and the predictability of the production process with respect to uptime and quality. If the production process is out of control and fluctuates wildly, short term planning with any degree of accuracy

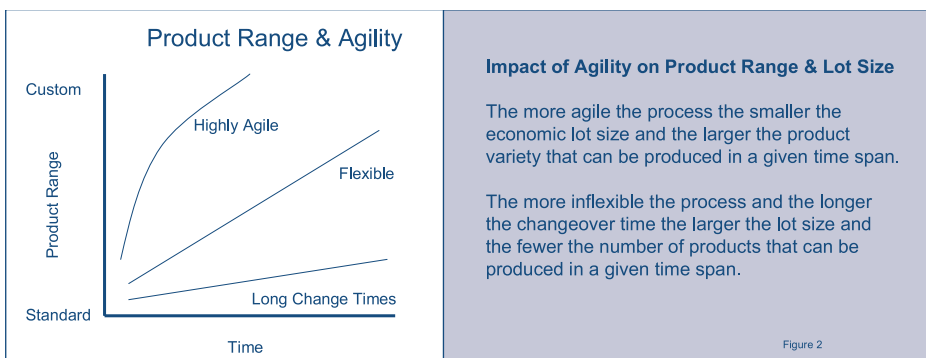
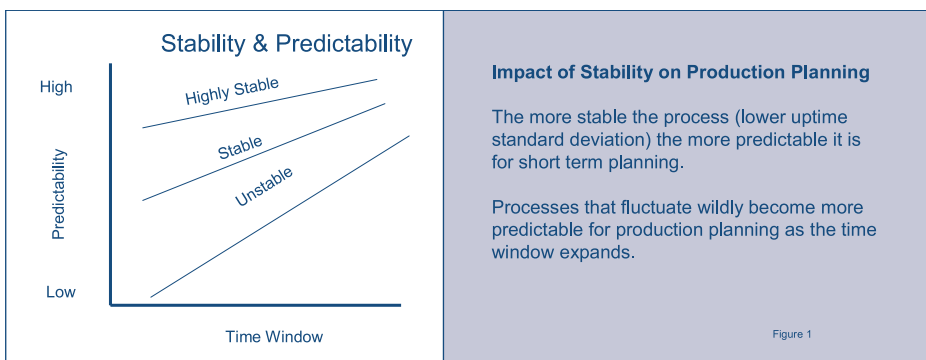
(predictability) is highly unlikely. Therefore, short planning horizons coupled with high production process variability usually result in customer dissatisfaction due to quality or delivery problems. Additionally, extra costs and inventories are incurred as a result of having to expedite orders to meet customer needs and commitments. However, even unstable production processes get more predictable regarding delivery performance as the time horizons lengthen. Conversely, the more stable the production processes are, the greater our confidence in meeting short time horizons. (See figure 1)

Product Range, Capacity Utilization and Agility: The interrelationship of product range, the level of capacity being utilized and the agility of the plant or operation also have a significant impact on the complexity of the planning and scheduling process. For instance, if we're planning and scheduling production for a plant that continuously produces only one product (commodity chemicals come to mind) meeting the customer's time constraint for delivery is a function of capacity utilization and inventory policy. This is a rather simple process. However, as the number of products and their complexity increases so does the complexity of the planning and scheduling process.

When producing multiple products or product lines, the ability of a production process or plant to produce a variety of products with minimal product change-over time (agility) becomes a key factor. The degree of agility at a given level of capacity utilization and lead time impacts minimum production volumes (lot size), production sequencing, and inventories (Raw, WIP, Finished). The greater the agility of a process the closer it comes to achieving "one piece flow" (lot sizes of one). As a plant becomes more agile it becomes more responsive to customer needs and requires less investment in inventories. The need for agility is greatest in discrete manufacturing operations with wide variation in product mix and batch processing operations where lot sizes are relatively small. The product range, lead time and agility relationship for a given capacity utilization level is illustrated in figure 2.

Planning & Scheduling: As we've seen, the accuracy and complexity of the production planning and scheduling process is a function of lead times, product range, and operational predictability, stability and agility. Once we have an understanding of these factors we can develop planning and scheduling guidelines or rules. These include minimum production quantities, product sequencing, synchronous manufacturing of sub assemblies and inventory levels.

However there is one additional factor that can cause havoc with the planning and scheduling process. It's the "good customer"/"buddy" factor. It is not rare to have production schedules interrupted, or orders expedited because "a good customer" or "buddy" of the CEO needs something right away. When this factor becomes part of the scheduling equation, all other rules are void.





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A deficiency typically find in IT is confusion regarding the difference between the *system* and the *tool*. The system is your set of internal processes and procedures. The tool may be the SAP PM module. When your actual work process and methods aren't reflected in your tool, the disconnect creates great dissatisfaction and waste. But when integrated, there is great synergy to get information to manage the business.

SAMI's method is quite simple. After the Strategic Plan, we undertake a detailed design for one or more of the Execution functions. In that design process we assure complete alignment between the tool and work processes, leading to a virtuous cycle of increasing understanding and utility of the system.

EXECUTE. Four functional areas exist in any manufacturing environment. These arenas are the typical focus of leadership. If done well, they lead to *functional excellence*.

- Capacity Development is usually considered to be the Design Engineering and Project Management functions in an organization. This function consumes \$100's of millions in what are often risky bets made on optimum market assumptions. A thoughtful and disciplined method to assure excellence in the assumptions, design, construction and preparation for production can be a valuable tool.
- Production Management. Everyone in the plant

believes with good reason that production is the reason we are all here. And indeed this is the vehicle for value creation.

- Logistics include materials management, purchasing and movements of people and materials. This function can make or break the Production and Asset Healthcare Management functions.
- Asset Healthcare Management. Is this just another term for maintenance and reliability? Perhaps at some levels it is. But it is concerned with optimizing and integrating with all parts of the business based on risk and value, and so goes beyond the traditional boundaries of M&R.

We have developed improvement models for Production, Logistics and Asset Healthcare. Indeed, the Asset Healthcare model is the well-known *SAMI Triangle*, relabeled and integrated in the context of *Strategic Asset Management*.

This article will be continued over the next several issues. However, the full article is available at www.samicorp.com.

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