



# FINDING TRUE NORTH

## ELEVEN STEPS TO THE MAINTENANCE AND RELIABILITY BEST PRACTICES

Most companies are looking at five key areas of focus for their Maintenance and Reliability groups. These are:

1. The ability to meet customer demand through asset availability and reliability
2. To produce those items at the least cost (cost of goods produced)
3. Customer value regarding quality (right the first time)
4. To ensure safety is not compromised for the worker or the consumer.
5. The process and the final product don't breach any known environmental standards or regulations.

Studies continue to show that 60% or more of organizations continue to be reactive from a reliability perspective. Unfortunately, this number remains unchanged from the past 20 years or more.

Today, many organizations truly struggle meeting all five of those objectives consistently on a day-to-day basis. To some, this is an obvious fact.

I go into production facilities every day that experiences unnecessary issues. Items like equipment breakdowns, struggling to meet customer demand, and MRO storerooms with no listing of materials (yes, still today). When you dig a little deep, you find no basis for the



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preventive maintenance work done (either vastly under or over maintain their assets), few or very poor measures to understand the current state and no handle on costs or basis for the maintenance budget other than historical costs.

For other organizations, while they meet the minimum requirements at some level in each of the five areas above, a tremendous amount of money remains on the table from a continuous improvement perspective.

Looking across the spectrum of organizations and their standing with the Maintenance and Reliability Best Practices, they typically fall into one of four categories:

1. Those failing in the reactive cycle of despair and have yet to embark on the journey to the Maintenance and Reliability Best Practices
2. Groups that have fallen back into the reactive cycle after transitioning out at some point in the past.
3. Organizations that remain transitioned out and continue to be stuck on a plateau of status quo.
4. Those world-class organizations that continue to push the boundaries and accelerate proactive change holistically.

Where does your organization fall in the two sets of criteria above?

From conferences where we speak and our professional experiences, I find that the majority of the organizations struggle with the basics. Work management practices are lacking in most organizations. Many have no documented business processes, and if they do, they are not consistent across the enterprise. Simple maintenance planning and scheduling functionality is elusive. MRO storerooms typically don't support the work execution process well. The basis for the PM program consists of knee-jerk reactions to equipment failures. Asset condition is not widely communicated or documented. Partnerships don't exist to provide access to the equipment for maintenance in many cases. Many organizations don't have clearly defined roles and responsibilities. Rarely does any one group audit their business processes and work activities to improve.

Human behaviors drive the majority of failures, yet few organizations have standardized work, measure rework or have a root cause process.



As a practitioner, I understand the problems. At a company where I was the Continuous Improvement Manager with responsibility for over 100 maintenance professionals, I saw them. Later, as an Operations Manager, I was on the other side of the fence. I could write a book on the problems that many organizations and their people struggle with from an asset reliability perspective. However, writing of problems does not provide solutions. Solutions come from failures and experience.

As that Continuous Improvement Manager, I led a change from the reactive cycle of despair towards the proactive reliability centered culture. I've got all the bumps, the bruises, and the t-shirt. We significantly improved the business results. Having worked with clients all over the world, I have learned a tremendous amount on how to craft change and achieve the Maintenance and Reliability Best Practices. I am privileged to work with a great group of individuals and other professionals who have experienced similar challenges and achieved success as well.

Many of you recognize the need to change your current approach. Some are not sure where to start. While many will not admit it, there is a fear to step out and foster change. People often struggle with insecurities that come with change. You want to get it right the first time. Some people can walk that windy road alone and become successful. Most others prefer a coach. Someone to help guide you on the journey to the Maintenance and Reliability Best Practices. For the remainder of this article, I'm going to provide solutions for you and act as that guide or coach using my knowledge and experience from helping others.

**First, we must overcome the fear of change,** if it exists. It took more than a day to create Rome. You cannot solve the problems that have taken years to create in a single day typically. Start small and build on the successes. Emotions often run high in factories and facilities. When things are not going well due to equipment failures and missed production targets, people become frustrated, even angry. You need to leverage this frustration by challenging people to seek a new way. Focus on behaviors, not wholesale culture change.

**Get executive support and commitment.** I'm not saying that it cannot begin at the bottom and gain momentum over time. Rather than pushing a chain up the hill, it is much easier to pull it downhill. If you lack the executive support, it is much harder to succeed. Maybe for you, it starts with the Plant Manager. Once you build their support and began getting results that drive the business objectives, it becomes much easier to gain higher levels of support.



It helps to think in the terms an accountant would use. You are not selling features, you have to be able to sell the benefits.

**There must be a roadmap to succeed.** There are a two of schools of thought on the stage before the development of the roadmap or strategic plan. You can have an assessment completed and utilize the recommendations coming from the assessment report to develop the plan based on the priorities.

Assessments are investments and can be significant depending on the level done. If you are a small reactive organization, assessments typically don't require the amount of time that a more proactive mining site with 800 maintenance personnel would to determine the opportunities. While the assessment provides the current state and can be used to benchmark from one site to another, the main goal is to utilize the recommendations to determine the priorities and action steps for the roadmap or strategic plan. The downside is more investment upfront. The upside is this approach yields much quicker results and is value-driven when led by an experienced facilitator or coach. Since the assessment provides the current state, it becomes a quantitative measurement tool of the before and after states.

The other school suggests educating the people and allowing them to help direct the plan. There is an old saying of "you don't know what you don't know" and is so true. If people in the organization have only experienced one direction or one way, they may not understand other approaches to the Maintenance and Reliability Best Practices as an example. In this approach, you invest in educating the organization (Maintenance, Production, Quality, and Management). Then, you utilize those individuals to craft the roadmap. From an investment perspective, you must educate regardless of performing a formal assessment. With the focus on creating the roadmap, the downside of education first are the lost opportunity costs as it takes the time to educate and coach. A benefit is quicker buy-in to the process.

I prefer a hybrid of the two. As part of conducting the assessment, use the assessment process to help people understand and buy-in. During the assessment process, I integrate a level of education to help people understand. Then, they are in a better position to help identify the opportunities and develop the actions and priorities. The deeper levels of education will follow on later when on the journey.



Consider how you will communicate. In most organizations, this is a very large opportunity. Let me state this again. How and at what frequency will you communicate? Maybe it is a department communication board that is regularly updated or a presentation that runs in the breakrooms. Bottom line, you need to make sure you are communicating progress on the plan, showing other individuals working with the new approaches, and soliciting testimonials from them to change the behaviors at the site.

In John Kotter's book, *Leading Change*; he makes an interesting comment regarding leading change. He notes that even when we are communicating, we have probably under communicated by a factor of 10 to 100 times.

**Paint the vision.** Use meetings to educate the teams and other functions on the direction. Remember that reliability is not solely a maintenance thing! While most maintenance groups need to get their house in order, other functions can hold a larger percentage of the asset reliability than Maintenance. Share what good looks like in your world from a Best Practices perspective. Doing so not only educates but gains buy-in at the lowest levels. As we said previously, many are frustrated with the status quo. Some are exhausted from the reactive cycles.

**Get others involved to gain buy-in.** It's much easier for people to buy-in to things they helped create where they have ownership. Ideally, you would like cross functional teams comprised of 6-8 individuals. Depending on where the roadmap points you, individual teams may focus on the CMMS/ EAM system, work execution, materials management, and reliability engineering as examples. Yes, I know that everyone is running "lean" with few resources. Maybe a team is comprised of individuals from different sites or maybe fewer individuals. In the end, you will need standardized business processes, templates, procedures, etc. These are the people that help create them with a level of guidance from a coach or facilitator based on the Best Practices.

**Educate and apply.** I have seen this multiple times in my experiences with organizations all over the world. We ask people to change their behaviors, yet we never show them the behaviors or the reasons why from an education perspective. When these organizations finally realize their error and begin the education process, change happens, and the implementation effort moves down the path much faster. On delivering the education, the



work duties and expectations must change. Doing so reinforces the training and makes it common practice.

Want some additional lessons learned from an education and training perspective? Don't send a single planner scheduler to a public planning and scheduling course, and expect that individual to return to a reactive environment to change the culture alone. To better effect change, conduct onsite training that brings in your maintenance supervisors, planner schedulers, engineers, and production supervisors.

Everyone gets the same message and can work together for change. Yes, there is a cost and time involved, but also huge value. That is very small price compared to the production downtime and excess maintenance costs for continuing to operate in a reactive mode. While it may be hard to fathom, investing time and funding into proactive change easily yields 10-20 times the return.

**Focus on and quantify the business results.** Develop every item on the roadmap or strategic plan with the goal of achieving the business results either directly or indirectly. The more directly linked, the better. Conducting the assessment effectively put a stake in the ground of the current state. With that, you have to establish measures that enable you to document progress on those business goals and objectives. It encourages executive support and commitment. Use your communication plan to share the results in all formats. Furthermore, you should be using money from the business results to invest in and sustain continued improvement.

**Publicize small wins to build support and get more and bigger wins.** When you publish pictures of people succeeding by eliminating equipment frustrations, others buy-in. The subject of the picture tends to work harder on the changed behaviors as well. Use your communication plan to drive support and buy-in.

**Build the foundation first to get the business results.** The list to this point has been sequential intentionally. As part of the roadmap to the journey, you must focus on the business results. Chasing the shiny objects, especially with technological bells and buzzword whistles is a recipe for failure. It's sort of like football too. You can create a bunch of complex plays for the offense, but if you don't have the basics of blocking and tackling down, you'll never have the ball long enough to make a difference. Think about what gives results from a maintenance perspective.



Much like building a house, if you don't have a solid foundation, the walls and roof will collapse in troubled times. The same applies for change efforts. If you can't execute well, don't chase after technology or advanced techniques until you do. Otherwise, you will not be able to sustain it and the effort will be lost.

Build your equipment hierarchy right in the CMMS/ EAM system as everything keys off it going forward. Define work down to the lowest point in the hierarchy where it applies. It builds good data for historical purposes as you improve. Stopping the numbering at the equipment center level for large complex pieces of equipment is useless in the end. If you don't have this, get help to get it.

Focus on your work execution efforts. Do you have a schedule for next week or better yet, two weeks out that covers every technician for each day worked? The schedule sets an expectation. To get there, you are going to require a minimal level of planning the work to start. Things like estimated job duration, the physical resources identified, and the materials to eliminate some of the avoidable delays. Otherwise, how can you build a schedule? A strong materials management/ storeroom function is required to ensure success in planning and scheduling as well. Typically, we find the opposite at many locations. Just focusing on the planning and scheduling function, we were able to help a single site return over \$1MM to the plant budget from the Maintenance function in 14 months.

As you have failures, address the PM program (CBM, PM, PdM, and hidden failure finding) from a root cause perspective. From work performing RCM2 and RCM3 activities, we know that 40-60% of the typical PM tasks add no value and reduce the available resources. It's not uncommon to see PM activities consume 75-90% of the schedule. Many of those involve replacing parts needlessly and introducing self-induced failure to an otherwise stable system. Time-based failure modes only account for about 20% of the potential failures so why the need to replace parts based on time? Need more technicians? Then make sure they PMs are focused on the right work in the right way. The majority of PM tasks should be inspections to find the equipment in the act of failure. You can't fix an entire site's PM program in a week. Start with a pilot area. Leverage tools like RCM2 or RCM3, FMEA, and PM optimization. The returns can be huge. In a single site, focusing on three small machines, we were able to reduce the PMs that the maintenance planner and technicians had to address by over 1000 separate PMs for the year.



Track your failures. It does not require a downtime reporting system. Not that they don't have a place, but we don't need to overcomplicate things. Think in terms of "critical events," items that may take you down for 2 hours or more. When that happens, use it to trigger a level of root cause process to determine the actions. Identify defect elimination opportunities. The root cause should push you back into the PM activities.

Clearly, this is not an exhaustive list of steps. Your needs may be different. The article is, however, a guided approach to creating value in the Maintenance and Reliability Best Practices for those trying to swing the pendulum from a reactive environment. One of the caveats to realize is that none of these items work individually in a vacuum. They are all intertwined. A great storeroom requires the participation of the planning function to minimize the volume of inventory carried as an example.

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