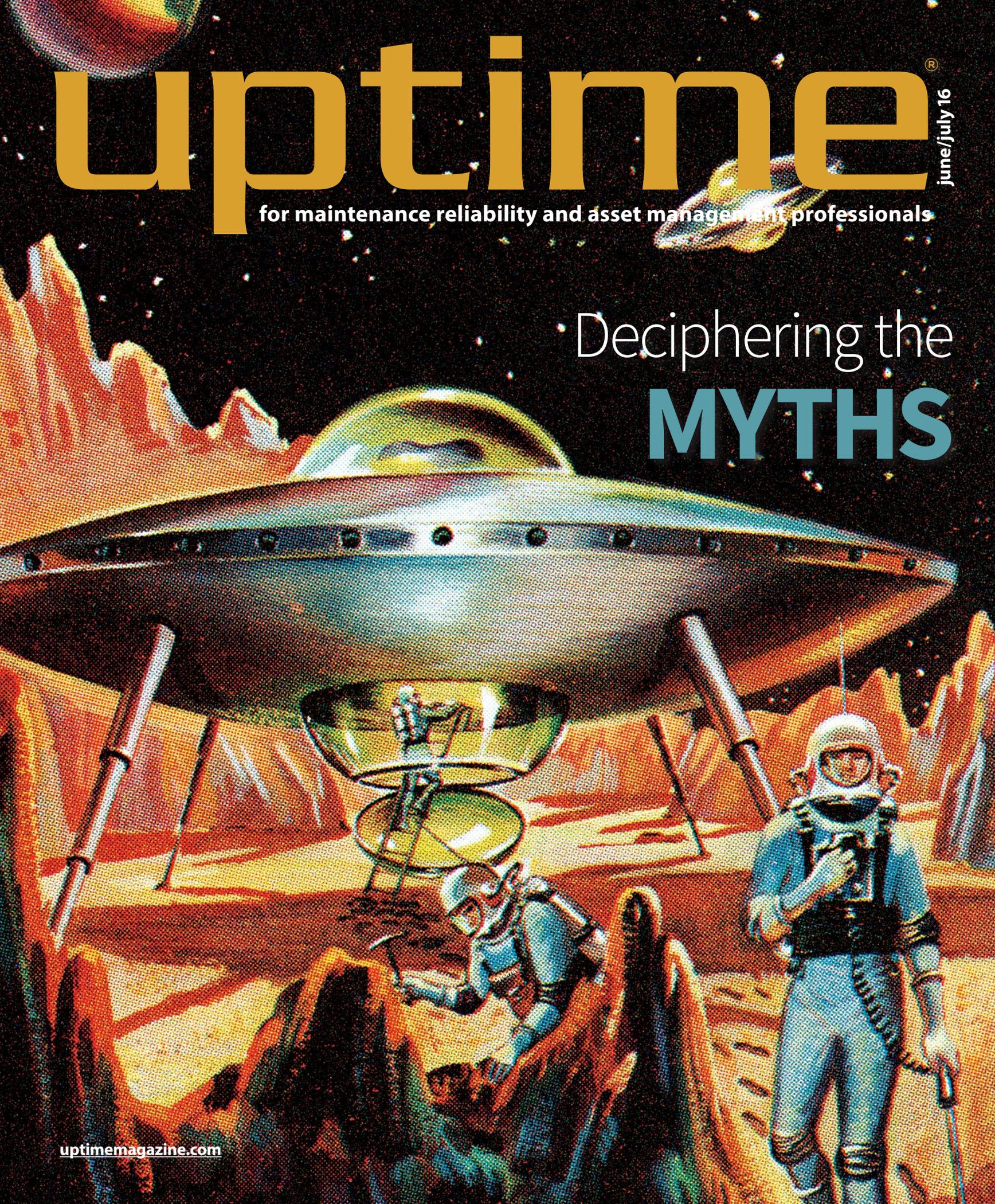


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The 3 Pillars of World-Class Maintenance

by Yassine Laghzioui

All operations managers know the great importance of being able to meet their organization's increasing expectations for reliability, lower costs and higher up-time. Admittedly, some do try to build a differentiator by focusing exclusively on building and tracking financial key performance indicators (KPIs). Nevertheless, this is merely a subset of what a world-class maintenance system is really about.

Developing world-class maintenance requires consideration of all success factors, as any failure could have an irreversible effect on the organization's motivation.

This article defines the three fundamental pillars of a true world-class maintenance system, one that offers the highest attainable level of asset proficiency.

Smart Maintenance Organization

Tailoring the maintenance and reliability (M&R) organization to the company's specification should be established as a priority. An awkward set of roles could impede maintenance crafts from excelling and be a source of frustration for them instead of helping those making decisions.

For instance, in big companies with large plants and wide assets, the reliability center and the planning and scheduling crew should be separated from the maintenance execution team. Otherwise, the risk of prioritizing reactive maintenance would be extremely high.

Choosing between centralized versus decentralized maintenance is a decision to make, as well. No unique solution

exists, but depending on several criteria, such as maturity of the maintenance processes' design and implementation, the size of the plant(s), the geographical spread and the complexity of the assets, a fair positioning could be proposed¹.

A company that is in the first stages of the maintenance excellence journey and thus, lacks reliability maturity, will probably choose a centralized organization. This mode that would allow an experienced and capable leader to guide the overall crafts through a set of effective initiatives, tools and principles. Obviously, once the level of asset care proficiency evolves in the right path, local and specialized teams will exhibit more autonomy and decision-making ability. Once systems and tools are in place and well understood by the teams, more decentralized²

THE RELIABILITY CENTER SHOULD BE SEPARATED FROM THE EXECUTION TEAM. OTHERWISE, THE RISK OF PRIORITIZING REACTIVE MAINTENANCE WOULD BE EXTREMELY HIGH.

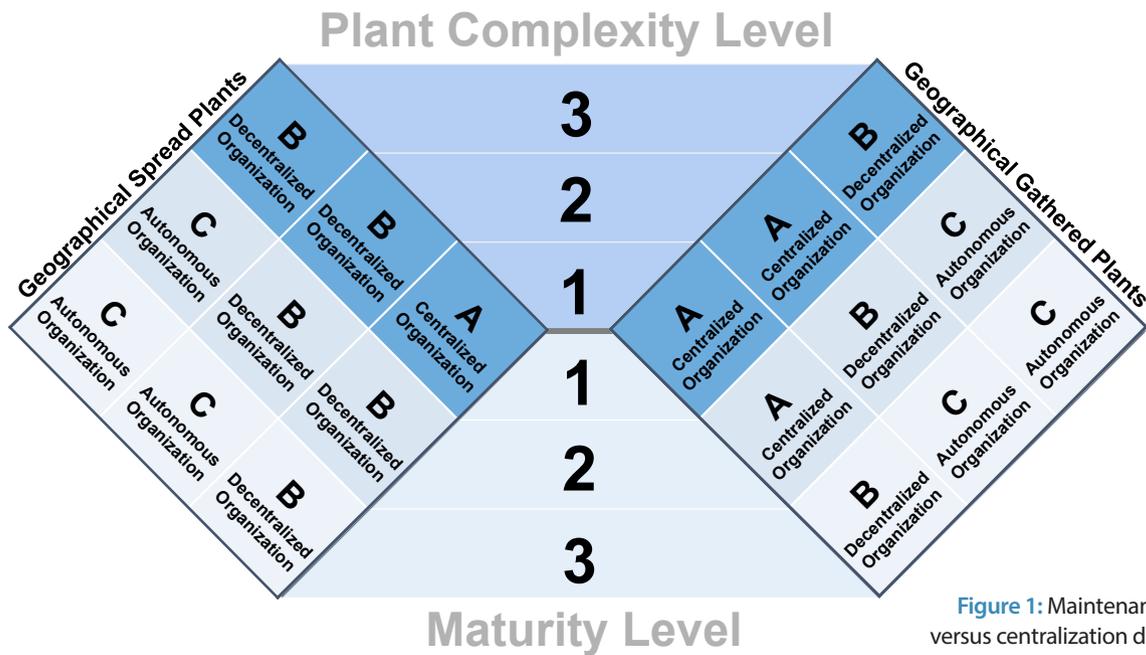


Figure 1: Maintenance decentralization versus centralization decision support matrix

and empowered maintenance units will drive improved performance for the whole organization.

An optimal organization happens when the reliability culture reaches the highest level – all maintenance work is preplanned on a long horizon. The ownership of resources and assets is no longer an issue. This is called an interdependent autonomous organization, which is based on devolution where every unit self-learns and spontaneously shares best practices and common data sets with other maintenance units from across the whole company. This type of organization adapts its objectives, focusing on customer expectation without missing the company’s high-level strategies and policies.

Figures 1-4 illustrate a simplified methodology to decide which of the organizations is more likely to achieve world-class maintenance on each stage of maturity.

Comprehensive Performance Tracking System

The widely known adage, “You can’t manage what you can’t measure,” is very accurate for asset management. Moving forward in the maintenance excellence path requires having the appropriate dashboard with gauges showing the correct measures.

However, evaluating maintenance effectiveness is not an easy task to perform. A rich and interesting body of material has been developed by maintenance professionals in the past decades, yet only a few companies can state they are tracking maintenance performance as they really want and need. Here is a list of requirements that must be embraced and integrated to ensure achieving maintenance performance management (MPM) that leads to world-class maintenance:

Data acquisition: Without sufficient and accurate data, there is no point in analyzing awkward metrics based on estimated records. The problem is not only about the necessity of getting the precision for performance improvement, but more about the risk of impacting crafts’ confidence and then lowering the likelihood of change success. For instance, the workforce will simply think that the KPIs displayed on the meeting room wall are there for reasons other than helping them improve their performance.

Ensuring good data acquisition entails implementing a set of incentives, ongoing operational discipline, and well configured and utilized computer maintenance management system (CMMS) software.

- Incentives could include providing modern and powerful tools, such as wireless tablets, laptops and smartphones, which reduce the time of entering data and improve its accuracy.
- Operational discipline is an essential ingredient to ensure data accuracy and timeliness. It requires clarifying responsibilities and accountability of

each member of the organization regarding whom, when and by which means a set of information will be recorded.

- Adapted CMMS software is extremely important to deal with the huge amount of data that maintenance crafts and assets generate each day. Choosing a system that matches the company’s culture and work practices and has an intuitive user interface increases the likelihood of implementation success and thus the convenience of collected data.

KPIs and metrics: To professionalize maintenance performance management, it is necessary to identify a dashboard that leads to the levers that will create the most value, help make efficient decisions and highlight problems that are worth the time and resources to solve.

Here are some questions where the answer “yes” means that a set of maintenance metrics is controllable and worthy:

- Does it show every opportunity for maintenance performance improvement?
Tracking performance improvement opportunities should be achievable when a dashboard emphasizes when and where creating additional value is possible.
- Are the measures calculated in a standardized way through both periods and entities?
There is nothing worse than comparing non-comparable indicators to draw conclusions and engage efforts in a misleading way.
- Does the set cover the lifecycle value of maintenance work?
Immediate efforts for cost savings and increased productivity need to be designed in accordance to a long-term assets management consideration.

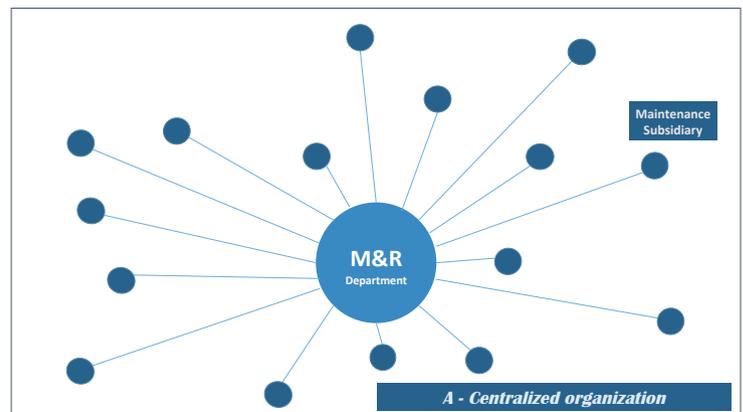


Figure 2: Centralized maintenance organization: Decision-making authority is transferred mainly to the M&R department

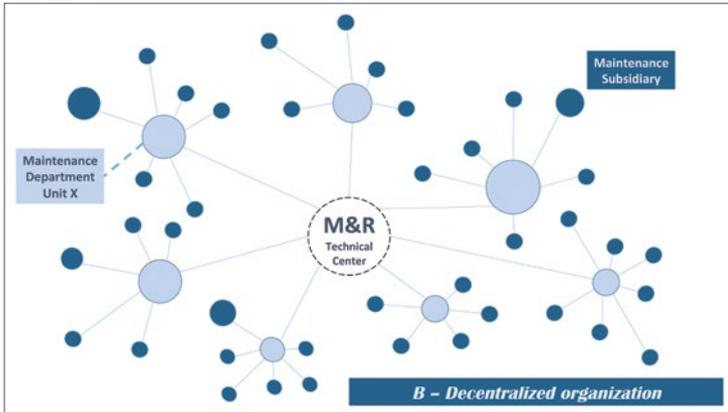


Figure 3: Decentralized maintenance organization: Decision-making authority is partially owned by local teams; the M&R technical center serves both an audit and a knowledge sharing function

A basic and more direct example is that postponing a preventive maintenance shutdown would instantly increase production and significantly decrease the costs. The consequences of this shortsighted decision would not take long to manifest themselves.

- Does analyzing the data allow maintenance crafts to keep moving forward in terms of practices enhancement?
When pursuing better work quality, more challenging scheduling, or higher inspection effectiveness, it's important to plan improvements without asking, "Who hasn't done their job." Instead, ask, "How can we get better." A good framework of indicators that highlight workflow optimization potential more than maintenance workers' mistakes would greatly help. Accountability without accusation is critical for improvement.

A Well Designed and Implemented Maintenance Work System

The third pillar is about designing an optimized and standardized way to do maintenance. This way of maintaining the assets should depend on the standards, processes and procedures of maintenance. The combination of these elements, when rigorously applied, provides the maintenance and reliability system.

Here is a simple, but effective, two-step approach for achieving a world-class M&R system:

#1 – Build a tailored and powerful set of standards and methods.

The quickest and easiest way is to bring in an existing set of tools, change the logo and communicate it to maintenance crafts. However, this is not the smartest way, merely because all the new material will be rejected just as the human body will reject a strange organ, even a healthy one.

These are the success factors to consider when building an M&R system for your company:

- Involve everyone, from senior managers to the shop floor. This will make available a great amount of knowledge, expertise and enthusiasm, and lower the risk of resistance in the implementation phase.
- Identify the M&R foundations. Even if the system is tailored to company specifications, the worldwide known principles that lead to maintenance

**THE MORE EFFORTS YOU MAKE,
THE POORER THE QUALITY OF YOUR
MAINTENANCE SYSTEM WILL BE.**

excellence remain the same, such as maintenance work management and reliability-centered maintenance.

- Think big, but start small. Preparing written standards and processes requires investing considerable time and effort. It is wise to focus first on a manageable scope while still being ambitious.
- Avoid unjustified complexity. Tools and standards should be as simple as possible. In other words, the more efforts you make to drive too much precision and unnecessary complexity into your system requirements, the poorer the quality of your maintenance system will be.

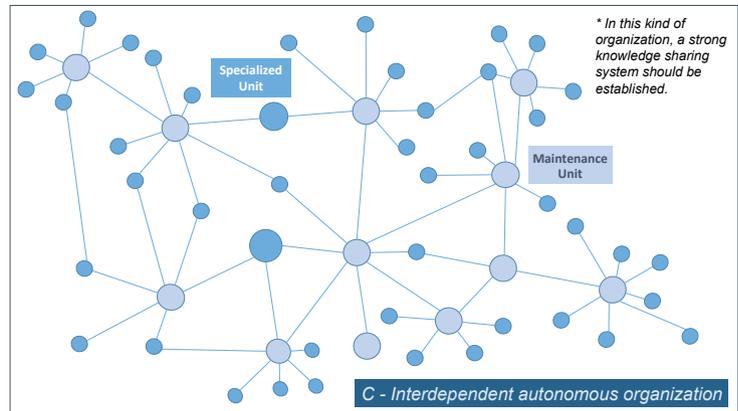


Figure 4: Independent and autonomous maintenance organization: Decision-making authority is completely owned by local teams

#2 – Enable M&R system execution consistency.

This is, in fact, one of the most challenging issues. The cultural and behavioral changes of the key players of the maintenance organization are a condition for success with any maintenance system implementation. Alignment of all members of the team, from top management to the most junior craft, is essential. Everyone should know their role and the value of their contribution to the overall maintenance effort. Senior leadership must ensure this alignment and have the vision and persistence to support it, especially as it first begins.

As far as the whole maintenance workforce is concerned, the right way to do maintenance should be categorically known as the way given by the M&R system.

Being persistent, showing the success, avoiding directive and autocratic management style, and adopting a leadership position are some good ingredients for success.

Developing a consistent change management plan is no longer a nicety, it is a necessity.

Notes

1. This model is proposed as a decision support tool. Other criteria, such as corporate culture and human resources capacities, should be taken into account before reorganization.
2. A decentralized and interdependent organization does not necessarily mean dividing all resources among the units. An approach that allows the possibility to share them depending on the value-based prioritizing criteria should be set. Obviously, this would not be possible in a non-mature maintenance system.



Yassine Laghzioui, CCMP, CMRP, is an operational excellence project manager specializing in maintenance and reliability at OCP Group. He is leading maintenance improvement projects in both mining and chemical sites. Mr. Laghzioui is the Chairman of the Moroccan Association of Maintenance Engineers and Managers and a member of the Association of Change Management Professionals. www.ocpgroup.ma

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