

HOW TO IMPROVE MAINTENANCE SCHEDULING IN ORACLE

8 Tools to Achieve Best Practice Maintenance Scheduling



PROMETHEUS GROUP



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Introduction

Scheduling increases maintenance efficiency and effectiveness. This is true even if your current scheduling practices are less than ideal. Any amount of maintenance scheduling is better than none. However, the greatest improvements will only be realized when you use best practice techniques, accompanied by a scheduling solution designed for the needs of maintenance and configured to your organization's processes.

Maintenance productivity is directly impacted by how work is scheduled. For example, say your labor utilization is somewhere between 45 and 55 percent. This would mean that during an 8-hour shift, the average tech is only actively doing maintenance for somewhere between 3.5 and 4.5

hours per day. That's obviously less than ideal. The good news is that estimate of 45 to 55 percent utilization is way off. The bad news is that it's inaccurate because it's far too high.

To cite just one example of this well-studied phenomenon, the "Maintenance Planning and Scheduling Handbook" by Richard "Doc" Palmer notes that the most possible time you're going to get in an 8-hour shift is between 6.5 and 7 hours per technician. That's the highest it can ever be. People need time to eat, take a coffee break, and go to the bathroom.

Palmer's studies have shown that without planning and scheduling the average is closer to 2.5 hours per technician, per shift. So where do those extra

four hours go? Simple: they go into tasks that could have been eliminated by efficient planning and scheduling.

Technicians who must determine if parts are in stock, order materials if needed, assemble their own tool kits, pull their own procedures, and find the equipment that needs maintenance are not going to be efficient. How can they be? They're doing at least three different jobs!

The productivity boost is the most obvious benefit of best practice scheduling, but it isn't the only advantage. Solid scheduling will allow you to spend more time on your PM program, less time on reactive maintenance, and allow you to manage your backlog more effectively.



Eliminate Manual Data Entry, Gain Detailed Time and Attendance Tracking

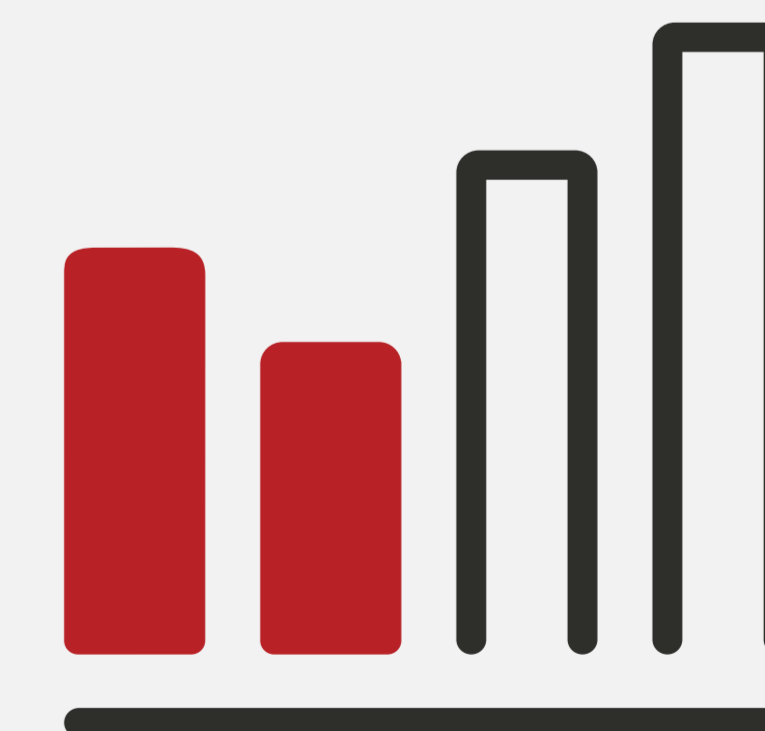
Improving resource utilization is a key goal for many maintenance organizations. However, as Peter Drucker famously noted, “If you can’t measure it, you can’t improve it.” That’s true, but correct measurement is only the first stage of any improvement process. In most cases, you must dig deeper to gain insight into exactly what the measurement is telling you.

For example, say your maintenance schedule for next week shows 100 percent resource utilization. On the surface, that not only looks great, but it would seem improvement is impossible. That’s because the raw number doesn’t tell you anything about the nature of the work, who has been assigned to do it, or work order dependencies.

The point of maintenance scheduling isn’t to keep crews busy. While one of the goals of maintenance scheduling is to complete more work, it’s important to remember another goal: ensuring that the work completed is the right work, done on the right asset, at the right time, by the right people. To do this effectively, you need the power to view how resources are being utilized on the schedule.

Prometheus Planning & Scheduling for Oracle gives you this power through the Scheduling Summary module, allowing you to analyze resource utilization daily or up to a full month in advance. The module also includes robust multi-filtering capabilities, ensuring you can achieve a direct view of the work orders, crafts, and assets

you’re most interested in. This allows you to create more accurate, targeted schedules, and thereby achieve higher resource utilization.





Case study:

Metals Manufacturer



Critical work planning and scheduling capabilities were lost when a major U.S. metals manufacturer rolled out a new ERP and EAM system corporate-wide. The impact was significant. In a single business unit alone, nearly 220,000 assets are housed across twelve sites and approximately 300,000 work orders must be scheduled annually with maximum efficiency and effectiveness. At the same time, the industry was facing cost pressures, furthering the challenge to optimize productivity, utilization, and cost efficiencies.

Following the global deployment of Oracle Enterprise Asset Management (eAM), updates to work orders, operations and resources had to be made on a one-off basis, resulting in considerable additional demand on the planners' time. Oracle eAM's embedded Workbenches did not allow the maintenance planners to interface with the work orders in bulk. Each ad hoc work order had to be scheduled separately. Staff did what they could with workarounds, but the process was unmanageable for a company of this magnitude.

The metals manufacturer chose Prometheus Planning & Scheduling for Oracle, a web-based, bolt-on maintenance scheduling tool that offers seamless integration with Oracle, to improve their process. Oracle eAM's live work order backlog is viewable from within Prometheus Planning & Scheduling for Oracle, where planners and schedulers can easily manipulate large amounts of data and accomplish more work in a shorter period of time.





Schedule the Right Balance of Work

A completely rigid schedule is a schedule that will end up broken. Conversely, if you put too much flexibility into your schedule, you may find yourself continually fighting fires. In turn, this may mean that high priority work falls through the cracks. Best practice scheduling requires that you strike a balance. This is one reason your weekly scheduling should include a mix of work, both low and high priority. This gives you the flexibility to substitute break-in work for low-priority work as needed, while ensuring that the high-priority work orders still get done.

However, this is sometimes easier said than done. Making changes to the schedule directly in Oracle ensures you maintain a single source of information, but the process isn't user-friendly and there's no method to bulk edit work orders. This

means maintenance supervisors must spend many hours on tedious, manual chores. This time could be better spent on maintenance improvement projects or analyzing KPIs.

You might gain more flexibility by using a third-party spreadsheet program such as Microsoft Excel, but the downside is that you must now enter everything into Oracle manually. In other words, it doesn't save much time, if any. In addition, manual data entry carries with it the risk that data will be entered incorrectly or not at all. There's also no built-in way to ensure that schedule changes are communicated to crafts, operations, and other stakeholders.

Prometheus Planning & Scheduling for Oracle provides two powerful tools to overcome these

challenges, the Supervisor's Worksheet and My Schedule.

The Supervisor's Worksheet provides powerful capabilities to view and edit crew schedules, reallocate work, roll work over, or send it back for rescheduling to balance loads. The Supervisor can also search the "Ready" backlog for break-in work and publish crew schedules as needed through the export function.

My Schedule is the corresponding module for crafts and technicians. It's typically used for time entry and to review past work performance using the integrated KPIs. All time entries are submitted for review and approval prior to posting to Oracle.



Case study: Coal Producer



A coal producer in Western Australia operates a major open cut mine, and provides power generation fuel for the electricity grid. The company had previously implemented Oracle eAM but needed to formalise their planning and scheduling processes to better control their work order flow. They used Microsoft Project to create five work plans, which then had to be rolled up into one master plan. Reporting was limited to customised reports that also required manual effort. Collectively, the company needed maintenance solutions that were user friendly, intuitive and did not require navigating multiple screens or forms to perform their work.

Prometheus Planning & Scheduling for Oracle has been a success at the company. Users can visually plan and schedule work natively without having to customise the standard solution or pay for consulting. “Planning and scheduling is so easy with drag and drop capability and it’s no longer hard work to get schedules out,” cited their engineering superintendent. Now they can plan, schedule, and post their 12,000 work orders per year more efficiently and easily.

As a result of increased visibility, the coal producer has enhanced reporting by populating more fields like resources and time estimates to improve their planned versus actual tracking. Backlog is also under control. The solution has reinforced the company’s organizational goal of continuous operational improvement.





Maximize Wrench Time with Accurate Resource Loading

Best practice scheduling relies on full utilization of all available resources. To achieve this, you need complete data to accurately measure loading while preparing the schedule. Oracle provides you with the proverbial “10,000-foot view” of your resource loading, but it doesn’t break it down by organization or department.

Prometheus Planning & Scheduling for Oracle uses two Availability modules — Shift Templates and Manage Hours — to provide the data you need to accurately measure organization, department, and resource loading while planning and scheduling.

This detailed resource availability allows for maximum work scheduling, with crews, shifts, and relative hours of availability configured to your specific environment. The Availability modules give schedulers and supervisors the power to easily accommodate events that can impact the schedule, such as overtime, shift changes, and shutdowns, while maintaining the accuracy of availability hours and related KPIs.

With these new capabilities, full resource loading is simpler than in Oracle, thanks to the solution’s intuitive graphic interface. All codes and entries are pulled from the value lists within Oracle

during the completion process. Once the records are submitted, they are updated back to Oracle, ensuring Oracle remains your single source of truth.





Case study: Wesfarmers Curragh



Wesfarmers Curragh (Curragh) is one of Australia's largest independent coal mines, producing around 8.5 million tonnes of export metallurgical coal and 3 million tonnes of domestic steaming coal every year. The company needed a scheduling solution that included enhanced capacity planning to improve labor utilization and advanced features to ensure the right work was matched with the right resources.

In the first week of production, Prometheus Planning & Scheduling for Oracle identified a backlog of 5,000 work orders that had been completed but never closed. The solution also identified open work orders that had not been completed but required work, prompting immediate corrective action by the maintenance execution team.

The solution has also improved resourcing efficiencies at Curragh. By utilizing the Crew Builder and Availability modules, Curragh now uses fewer contractors to complete the work, reducing the cost of maintenance as a result. Sharing of resources across crews also improved utilization and enhanced Curragh's ability to control its work management process.

Schedule compliance has trended upward since the product was installed. Visibility of work metrics across the maintenance organization has also been invaluable, allowing supervisors to log in, view work for their rosters, assign work, and seamlessly manage the daily workload.

Feedback from users has been positive, particularly in relation to managing schedule conflicts and executing the work management process





Keep Incomplete Work Orders Off the Schedule

Work orders that aren't ready to schedule shouldn't be put in the scheduling bucket. This may seem obvious, but it's an unfortunate fact of life for many organizations that some poor-quality work orders make it through. These incomplete work orders will inevitably cause delays, as workers hunt for missing information, tools, and/or materials. In short, incomplete work orders negatively impact wrench time and increase asset downtime.

In turn, ensuring only complete work orders make their way to maintenance personnel will have positive impacts on your KPIs, as workers are able to spend their time more productively. You'll also experience a lowering of the stress levels in the maintenance department. Think of that as an added benefit.

The challenge lies in ensuring that those

incomplete work orders don't make it on to the schedule. One possible solution is to have someone check over each work order manually to ensure it's complete. There are at least two problems with that idea, however. First, it would place a huge time burden on the poor staff member who gets saddled with this duty. There are almost certainly higher-value tasks that person could be working on. Second, there's no guarantee it will work! If an item is missed the first time, it can easily be missed the second time.

Prometheus Planning & Scheduling for Oracle makes this process entirely automatic through the Work Order Quality Check module. This module tests the integrity of unscheduled work orders, using the rules set by your organization. The solution gives you the power to determine what qualifies as a minimum standard of completeness. Any work order that doesn't meet this minimum

standard is filtered from the scheduling process. This improves overall execution and ensures that only work orders that are truly ready for execution make their way to the schedule.

You can also utilize staged environments to see how a proposed schedule will impact KPIs. This allows you to check your work, in real time, before posting the schedule to Oracle. As each work order is updated, the scheduler can make changes to the schedule, resources, or availability, and immediately see the impact to the organization through the graphical KPI charts so that adjustments can be made if needed.

All users can see the proposed schedule and its projected impacts, but it only becomes the official schedule once you post it to Oracle. This ensures you understand how any proposed schedule will impact resource loading before committing to it.



Case study: PotashCorp (Nutrien)



PotashCorp merged with Agrium in early 2018 to form a new company called Nutrien, the world's largest provider of crop inputs and services. Even before the merger, PotashCorp was a major company, with operations and business interests in seven countries. The company grew significantly with several acquisitions and equity investments since their 1989 initial public offering. Challenges grew along with the company, with multiple vendors, different processes, and varied reporting definitions across the facilities. As a result, PotashCorp began a business improvement initiative to align their facilities in Canada, the US, and Trinidad utilizing PotashCorp best practices. Their end goal was to drive continuous improvement by aligning processes, consolidating spending, and improving data analytics.

PotashCorp selected Prometheus Planning & Scheduling for Oracle based on its enhanced functionality. One driver for the decision was the unique Work Order Quality Check feature that tests the readiness of work orders by checking for missing data and resources, safeguards against scheduling incomplete work orders, and allows for corrective action to optimize the workflow. Among the other benefits realized by the company, work is now scheduled four weeks ahead for 80 percent of the work orders, versus one week previously.





Keep Important KPIs Front and Center

Best practice scheduling relies on having the right information. You need up-to-date data on labor utilization, availability, and the assets themselves to ensure that you're scheduling with maximum efficiency.

In addition, you need to keep track of all preventive maintenance and regulatory work orders. To make sure none of these are missed, you need to be able to adjust your schedule to ensure time and cycle limits are strictly followed, the correct crafts are assigned, and the work orders are performed within the required timeframe.

For many organizations, the challenge isn't in gathering the required data. The real problems are ensuring the data displayed is as up to date

as possible and that it's displayed in a way that's easy to understand. Challenges can also arise from data overload. All too often, it's very difficult for a scheduler to pick out the data they really need from extraneous KPIs and dashboards.

The KPI Center in Prometheus Planning & Scheduling for Oracle provides dynamic, graphic representations of the most important metrics you need to improve and optimize your maintenance schedule. All KPIs can also be configured to provide the right feed to improve compliance with your existing processes. In terms of function, KPI Center draws on the same KPIs as the rest of the application but presents them in a larger scale. This greatly simplifies comparison and analysis. The graphical KPIs and Numerical Table of Values

can also be exported for use in other applications or reports.

You can configure any KPI you wish, but the system also comes with a library of over 80 pre-built KPIs, all configured to run in real time. In addition to showing in the KPI Center and Dashboard modules, KPIs are also displayed where they're most useful: across the top of the Planning, Scheduling, and Supervisory modules.

The Dashboard module makes it easy for any user to find exactly what they're looking for. The module is user-configurable and allows users to view up to eight different KPIs on five tabs. This gives each user fast access to as many as 40 KPIs.



Case study: Porterbrook Leasing



Porterbrook Leasing specialises in the leasing of all types of railway rolling stock and associated equipment and is one of the three UK major rolling stock leasing companies. After implementing Oracle eAM including customizations, Porterbrook needed a more robust scheduling solution that included the ability to perform mass scheduling updates. They also required a visual representation of the group of assets and fleets they manage. This was particularly important since the assets are mobile and spread across the United Kingdom, leased by multiple operators, with maintenance being performed at numerous depots.

Prometheus Planning & Scheduling for Oracle was easy to get up and running and seamlessly integrated with Oracle eAM. The solution requires no maintenance and upgrades are relatively simple. Mass updates to schedules are completed in significantly less time for the 2700-plus work orders per annum being managed.

The users can also update descriptions in mass versus one work order at a time. To ensure their high standards, Porterbrook monitors the condition of their over 5700 assets and their costs to ensure maintenance is performed in a timely and consistent manner. The views available in Prometheus Planning & Scheduling for Oracle enable Porterbrook to visualize the planning window for their fleets and then manipulate schedules to ensure mileage limits are strictly followed, the correct depot is assigned, and maintenance is performed within the required timeframe.





Conclusion

Scheduling is at the heart of maintenance best practice. Prometheus Planning & Scheduling for Oracle supports your scheduling efforts with an intuitive, graphic-based design, built-in quality checks, complete views of your labor utilization, availability, and essential KPIs, and seamless

integration with your Oracle system. The solution has scheduling best practices built right in to support you on your continuous improvement journey, including the ability to make bulk changes to work orders with a single click.

Learn how to power up your scheduling with Prometheus Planning & Scheduling for Oracle.

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