Transportation & Logistics

Achieving breakthrough maintenance, repair and overhaul performance

PricewaterhouseCoopers' Maintenance, Repair and Overhaul Workbench Framework drives MRO performance enhancements, which can improve efficiency, reduce costs and achieve new levels of maintenance productivity.

Today's maintenance, repair and overhaul (MRO) functions face challenges on several fronts: from slow turnaround time and poor data integrity to aging systems and outdated manual processes. In this rapidly changing, safety-focused function, these challenges can have widespread impact on the organization. To overcome these challenges, companies with MRO functions seek enterprise technologies that can deliver powerful capabilities with a rapid return on investment and time to value.

PricewaterhouseCoopers (PwC) has developed an MRO Workbench Framework that extends the reach of existing enterprise resource planning solutions to achieve dramatic improvements in MRO processes, data management, executive information and sustainable cost reduction.

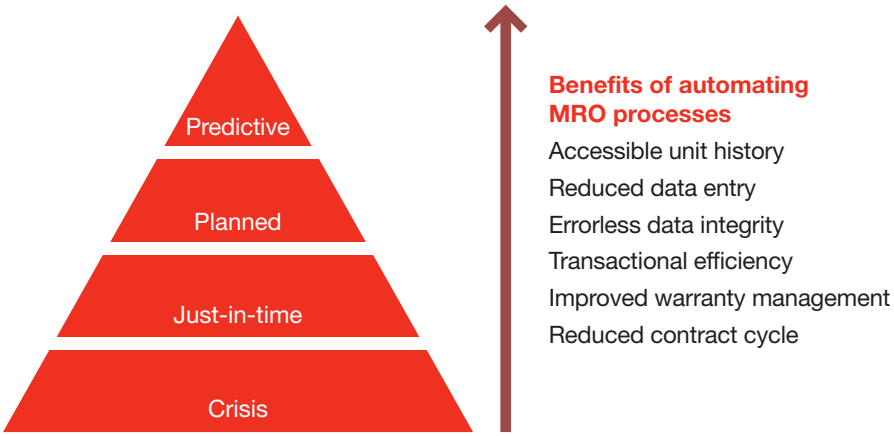
Hierarchy of sound MRO practices

We have seen a shift in thinking within leading MRO organizations in the areas of maintenance processes and execution. What sets MRO groups apart are their data-driven approach to maintenance. Over time, these companies have developed an increasingly mature methodology around MRO, starting with a review of key processes and then implementation of technology to extend and automate their MRO functions.

Engineering and maintenance organizations with these attributes ascend the hierarchy of MRO practices and have sound MRO operational focus. They are able to operate more programmatically and capture savings opportunities quickly. PwC's MRO Workbench Framework helps your organization achieve improved MRO performance—moving from a purely reactive mode to one that is predictive and more cost-effective—by focusing on the four dimensions of an MRO performance model as noted in Figure 1. The four dimensions include:

- **Crisis maintenance.** Virtually every MRO organization finds itself in a reactive mode from time to time. However, businesses that view the crisis approach to MRO as "business as usual" fail to realize cost savings or productivity gains. A leading-practice approach is to consider reactive maintenance as a component of your larger MRO methodology.
- **Just-in-time maintenance.** Companies capable of using a just-in-time model benefit from lower costs, reduced inventory and improved working capital. Urgent requests will still come in, but enhanced processes and systems preserve adequate lead time to set schedules and meet turnaround time commitments.
- **Planned maintenance.** Another key to improved MRO performance is a programmatic methodology. For example, a business may have contractual relationships in place to perform a specific number of repairs each month. Or it may have a field service response profile in which it has committed to a certain percentage of uptime across the fleet at all times.
- **Predictive maintenance.** With the first three layers of maintenance execution in place, you can implement this fourth layer in which you fully understand your aircraft and its performance in the field.

Figure 1. Key dimensions of MRO performance



These maturity levels apply to all aspects of the engineering and maintenance operations, including base stations, line stations, overnight checks, AOG support, contract maintenance, integrated supply chain, parts maintenance agreements, and rotables/spares planning.

Regardless of where your organization is in the maintenance maturity hierarchy, we can help you achieve improved MRO performance through PwC's MRO Workbench Framework (Figure 2). To facilitate rapid implementation of these solutions, PwC has developed relationships with SAP, Oracle, Mxi, Aeroxchange, MCA, HP and others that support all aspects of effective fleet management, spares planning and MRO execution.

PwC's MRO Workbench Framework was designed by a team of professionals with hands-on maintenance experience and was guided by a comprehensive set of specific MRO business requirements. The solution is supported by accelerators such as SAP Solution Manager, including configuration management, business requirements, solution decision making and documentation.

Figure 2. PwC's MRO Workbench Framework

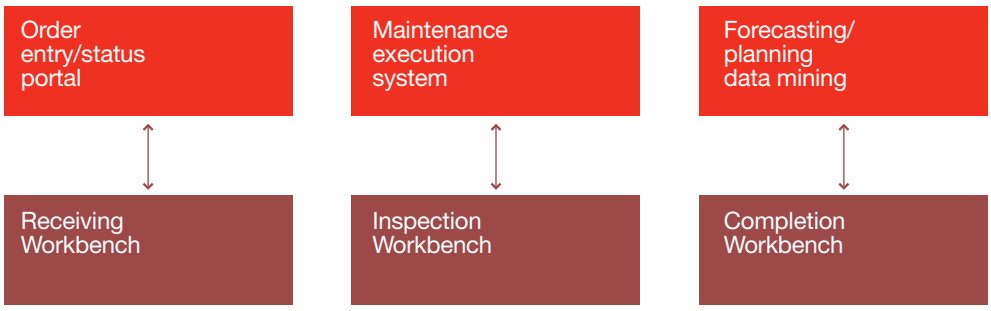
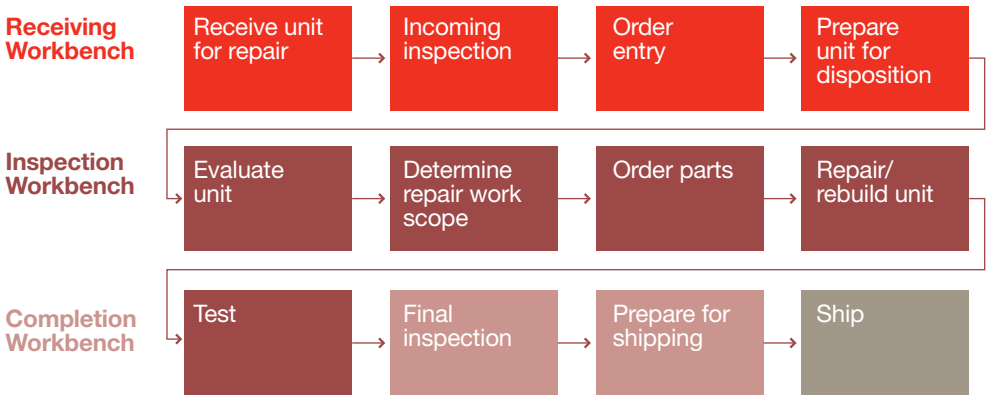


Figure 3. Automated MRO processes powered by PwC's MRO Framework



A three-phase approach to MRO execution

The PwC MRO Workbench Framework supports the end-to-end maintenance flow for aircraft/engine/component maintenance operations, which fall into three distinct transaction sets to facilitate operation efficiency for the maintenance technicians (Figure 3).

- **Receiving.** The Receiving Workbench integrates and simplifies the multiple complex transactions required to receive and prepare units for the MRO process. It combines many traditional transactions into one presentation layer to streamline the dock-to-induction process. This helps improve process efficiency and accuracy.
- **Inspection Workbench.** The Inspection Workbench automates the creation of the complex ERP order structures and significantly streamlines the induction, inspection and disposition steps for each end item, component or subcomponent to be repaired. The approach goes through several maintenance and preparation steps in an integrated and standardized manner. In addition, it serves as a complete tool for maintenance execution, including obtaining parts and determining the status of the repair, staging and final assembly.
- **Completion.** This process directly addresses potential quality and documentation issues that plague companies as they close out their MRO work. The component solution combines many transactions into one presentation layer, providing a comprehensive view of all remaining items for work events. The Completion Workbench speeds the time from final inspection to shipment by combining closeout transactions and verifying data accuracy.

The framework's flexible/multi-application system design and integration allows for customization to meet specific company requirements while still adhering to your ERP system's standard and automated process flows. Furthermore, an implementation using PwC's preconfigured tools and solutions can deliver as much as 60 percent to 80 percent improvement in productivity and costs to an MRO organization.

Moving toward programmatic MRO operations

Today's leading MRO organizations rely on a programmatic, predictive and data-driven approach to make sound decisions about Fleet Management/ Configuration Management and MRO and its impact on the bottom line. By using best practices such as PwC's MRO Workbench Framework, you can begin to transform your maintenance processes and execute more efficiently, delivering cost savings to the business and achieving higher levels of MRO performance.

Simplifying the inspection process

Complexity has been one of the barriers for MRO organizations when considering an enterprise resource planning solution. For example, in the past, ERP applications required a service order for every serialized object processed through the system. In the case of an aircraft engine teardown and inspection—in which serialized objects must be linked to the same aircraft tail number—this could be hundreds of manually created service orders.

To simplify this inspection process and improve traceability, PwC's MRO Workbench Framework engages the configuration management functionality within the ERP application to create component-specific data. This information links to the bill of material or the master part list, highlighting key integration points to the end item. PwC's MRO Workbench Framework then creates an order hierarchy, individual work packages and underlying system documents for tracking, monitoring, processing, collecting and documenting each item on the aircraft.

PwC's MRO Workbench Framework brings it all together with executive information systems such as FleetVision—an open-architecture framework initially built in Business Objects and Teradata to provide information about your fleet, its mission-readiness status, tail number configuration, aircraft maintenance history and component repair history.

This framework is designed to leverage your existing investment in ERP/MRO solutions, or help to bridge to your transformational replacement common processes and IT technologies.

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