



OPTIMAL MAINTENANCE DECISIONS INC

Setting Maintenance Priorities through a Gap Analysis



SUMMARY:

Companies with large asset inventories can reduce costs, improve performance and reliability by optimizing the maintenance process and thus add value to the organization.

The outcome of the OMDEC Gap Analysis process can lead to substantial and sustainable cost savings, production improvements and a far better understanding of the Risk, thus ensuring that informed decisions about critical equipment can be made with confidence based on provable facts.

The purpose of a Maintenance Gap Analysis is to respond to three key goals of Site Management:

1. To obtain an **objective and independent** assessment of their maintenance function;
2. To use the results to develop a **road map** for future operational and maintenance performance improvement; and
3. To identify opportunities for maintenance **to increase the value and reduce the cost** of their services.

The Gap Analysis typically takes three to four weeks, and results in a presentation and a report which includes:

1. Detailed findings and recommendations,
2. An assessment of priorities based on impact, benefits and task precedence, and
3. A Microsoft Project Plan showing task sequence and dependencies.

Typical priorities that emerge:

1. The imperative of having a reliable and well-functioning maintenance management system to maintain and control the maintenance **best practices** and act as the core of the maintenance knowledge base;
2. A program to enhance the impact of maintenance on **improved** operational results;
3. Establish and nurture a reliability center, tasked with evaluating and developing new reliability analyses and **continuous improvement** maintenance practices;
4. A list of value improvements and cost savings opportunities and **how to achieve them.**

Following the Gap Analysis, Site Management will have a well-documented forward path to follow in setting internal goals and budgets. The target is **cost-effective maintenance improvement** combined with its positive effect on operations. This report gives Management **a clear road-map for priorities** and for the allocation of resources.

BACKGROUND AND OBJECTIVES:

Gap Analyses are most effective where the Site Management recognizes that improvements can be made to both operations and maintenance, but the priorities and opportunities are unclear. Most industries will benefit, but the benefits will be **highest where the cost of maintenance and the cost**

of failure is a high proportion of total operating cost. For example: utilities, pulp and paper, mining and metal processing, oil and gas, chemicals etc.

Site Management should set specific objectives from the outset; here is a sample:

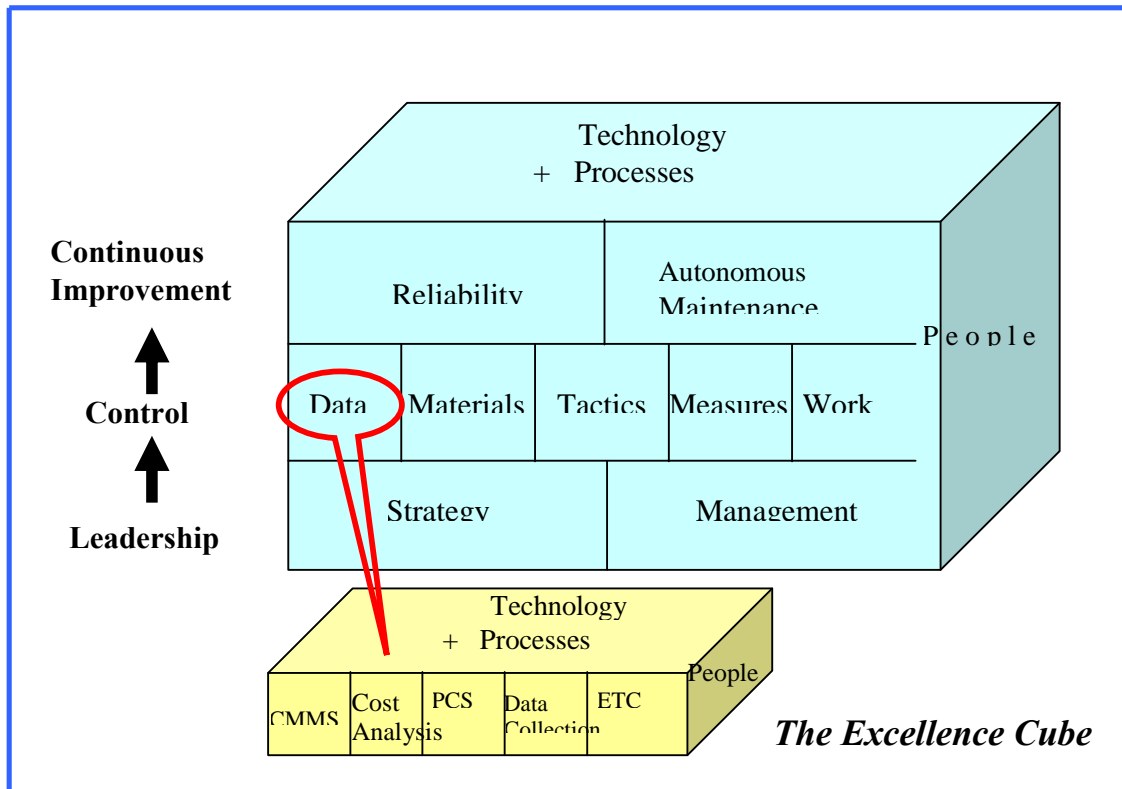
1. To identify the gaps between the Site's current maintenance status and industry best practice, combined with OMDEC experience at other similar sites.
2. To develop a clear roadmap for setting action priorities to close the gap to the best industry practice - but with a strong emphasis on what is realistically achievable.
3. To identify opportunities for cost and reliability improvements, and whether these are subject to any conditions.
4. To propose a means by which **maintenance continuous improvement (or "Living RCM")** can become the standard practice.
5. To show the benefit of maintenance continuous improvement on operations.

PROCESS AND METHODOLOGY:

While the analysis and reporting process generally take the following path, each analysis project is tailored to the precise needs and objectives of the site:

1. Review and analyse basic documentation such as Site objectives, capital plans, maintenance budgets, maintenance management reports, reliability data etc.
2. An introductory session with key staff to explain and discuss the objectives, process and outputs of the assessment.
3. A safety briefing and plant tour to familiarize with the layout, equipment, overall plant status, maintenance shops and stores.
4. Group and individual interviews with staff – maintenance, operations, administration and management to understand the practical dynamics of the business. This is a key activity of the assessment as it provides an invaluable source of opinions, issues, process details and opportunities.
5. A detailed questionnaire for confidential completion by all staff. This provides a second opportunity to share views and experiences in confidence. The questionnaire follows the analysis model of the Excellence Cube (shown below, and developed from John Campbell's book "Uptime"). This is a well-tested process ensuring that the results fully cover all aspects of the maintenance function, plus the impact on operational effectiveness and costs. **This follows the basic principle that the purpose of maintenance is to provide value to the organization – value which is best shown through the operational benefits achieved.**
6. The results of the questionnaire are analysed to show any significant variances among the on-site departments, and variances from other similar organizations. These variances are verified and integrated into the final recommendations. To ensure maximum information sharing and feedback, daily debriefs should be held with Site Managers to explore the findings and discuss the opportunities.





7. The data analysis leads to an interim report covering findings and recommendations which is discussed with Site Management to validate the key facts.
8. The final report consists of three sections:
 - a. Findings and recommendations,
 - b. Each recommendation is qualified by the effort required to complete it, expected benefits to maintenance and operations, the required sequence of the tasks and the proposed priority,
 - c. A Microsoft Project plan showing the task precedence and dependencies.
9. A final debrief presentation in which all staff are invited to question and comment.

This process requires numerous back-tracks to verify findings and test the applicability of the recommendations. Participation from the staff is enthusiastically sought, and lively debates add to the quality and applicability of the results; and by no means are the suggestions and recommendations usually accepted without challenge.

RECOMMENDATIONS:

Many improvements can be realistically introduced, even for a well-functioning Maintenance group. Examples of these follow:

- A. **Maintaining high quality content, functionality and use of the CMMS is mandatory.** Without solid and reliable data, further improvements are on shaky ground. Priorities include training local super-users with the mandate to help others in their area, cheat sheets for system processes, focus on correct data for critical equipment and spares, work order content quality improvement, stores record accuracy, and providing high quality output reports.

- B. **Balancing work and between Operations and Maintenance** requires close attention to who does what, combined with focused skills training, better matching of jobs with skills and improved feedback about tasks required and tasks completed.
- C. **Emphasize continuous improvement through closer monitoring of work order and task quality, job performance and data review.** Key proposals include formal de-briefs and systematic root cause analysis on complex jobs completed, challenging targets for work planning, regular reviews of work order content and work processes to ensure improved practices, repatriating selected outsourced jobs and development of KPI's such as Work management performance, MTTR, Backlog, number of work orders reviewed for improvement, Stores service levels etc.
- D. **Introduce Reliability based maintenance. (OMDEC Living RCM).** The first step is a cost/benefit analysis and in parallel, the key gaps in the data collection process must be filled to lay the right foundation. Consistently linking PM's to failure modes and expanding the condition-monitoring program are the next steps. KPI's (such as MTBF, Availability, Work Order costs by equipment, Failure costs, knowledge record references, new knowledge records) focused on reliability should be developed and maintained.
- E. **Identify value improvements and cost reductions,** e.g. stores optimization, reductions in failures, stretching the maintenance interval, eliminating unnecessary maintenance, reduction in the use of external contractors, and the consequent ROI contribution.

CONCLUSIONS:

Management expects from the outset that an objective review will identify opportunities for improvements; this usually proves to be the case. The question is always "how much?" Obviously amounts will vary according to the business and the state of the current maintenance and operations. The following may be regarded as typical examples:

1.	3% increase in uptime through improved PM management	Pulp & Paper company
2.	21% reduction in motor maintenance costs due to use of EXAKT failure prediction software	Mining company
3.	32% reduction in Stores inventory value while maintaining service levels due to improved stores management practices	Power Utility
4.	25% increase in wrench time and 90% reduction in contractor costs due to improved work planning and PM use	Plastics manufacturer
5.	Maintenance cost decrease of 22% due to change from 30:70 to 80:20 pro-active to re-active	Integrated Steel Manufacturer

By focusing on realistically achievable goals, and using a consistent feedback mechanism, Site Management can turn maintenance continuous improvement into standard practice and add the value to the bottom line.