Abeyon

AN ABOVE AND BEYOND APPROACH TO ACHIEVING EFFICIENCY IN MACHINE OPERATIONS USING ARTIFICIAL INTELLIGENCE

Def: Reliability Centered Maintenance

A strategic approach to asset maintenance that focuses on identifying potential failure modes in equipment, analyzing their criticality, and then implementing proactive maintenance tasks to prevent failures and optimize asset reliability, essentially prioritizing the functions an asset performs rather than just its physical components

Every agency aims to maintain mission-ready assets, ensuring optimal performance and reliability to achieve their objectives efficiently. A critical factor in accomplishing this is implementing effective asset maintenance strategies that enhance productivity, reduce maintenance costs, extend asset lifespan, and improve safety. Organizations that do not adopt Reliability-Centered Maintenance (RCM) often encounter substantial challenges, such as increased downtime, elevated maintenance expenses, and diminished operational efficiency.

Critical to success is to harness the power of **Artificial Intelligence (AI)** to implement RCM, enabling maintenance teams to optimize performance by determining the right maintenance, at the right intervals, for the right equipment. This approach drives smarter, faster, and more efficient operations than ever before.By leveraging AI to perform failure mode analysis, maintenance schedule optimization, predict failures and automate tasks, organizations can achieve efficiency and be mission-ready.

Abeyon has extensive experience implementing a methodical 3-phased approach to achieving reliability centered maintenance by leveraging Artificial Intelligence technology.

IDENTIFY **ANALYZE** **IMPROVE**

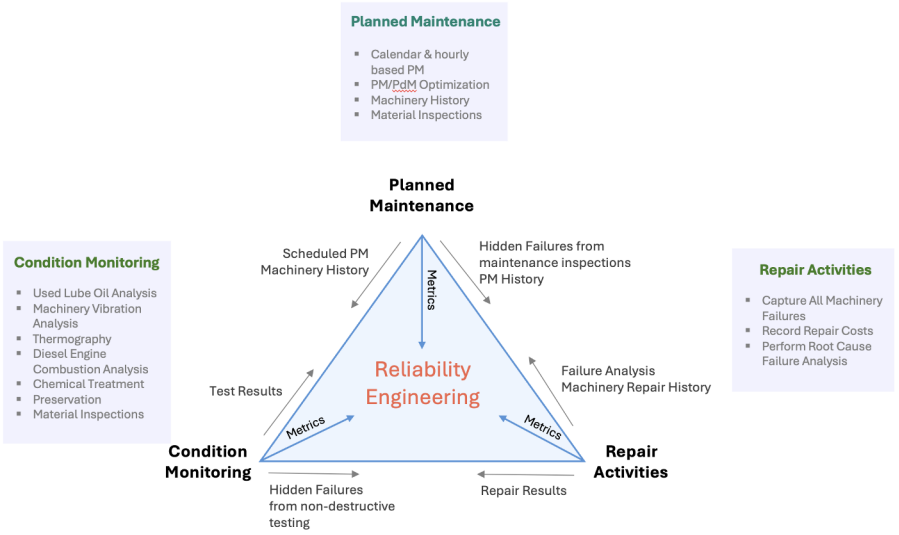
IDENTIFY

Our approach centers on identifying the most valuable assets critical for operations that need to be analyzed for RCM.

Leverage AI and gain visibility into asset history from historical structured and unstructured repair and maintenance documentation.

Enhance and extract data from Technical Manuals, drawings and other scientific documents

Our custom AI models will identify failure modes from repair, maintenance data and other asset data such as maintenance logs.



ANALYZE

Determine the consequence and analyze the effect of failures occurred:

- Is it a safety issue?
- Is it causing functional failure?
- Did the failure result in outage?

Facilitate a Maintenance Effectiveness Review that brings cross functional teams to review and analyze existing Planned Maintenance (PM), PM completions, PM Compliance, machinery repairs, calculate Mean Time Between Repair (MTBR), Mean Time Between Failure (MTBF).

IMPROVE

Provide recommendations to existing maintenance plans to improve asset maintenance effectiveness and applicability.

Provide recommendation to optimize maintenance schedule that minimize costs while ensuring reliability

Provide inputs to maintenance planning efforts by identifying proven effective and applicable maintenance tasks for efficient operations

Provide recommendations on improving resource allocation, so that resources are focused where they are needed the most

Provide feedback mechanism to refine maintenance strategies over time, incorporating lessons learned from equipment performance and failure data.

Government Innovation Awards

Abeyon's "*Machine Learning to Improve Reliability Centered Maintenance (RCM) Analysis*" project for Military Sealift Command (MSC) was recognized as the 2018 **Government Innovations Award winner** among **DoD projects** for implementing a "Best in Class" Machine Learning (ML) and Natural Language Processing (NLP) technology.

BENEFITS OF RCM

- Increases RUL (Remaining Useful Life) of an asset
- Improves maintenance through standardization
- Provides cross functional visibility
- Saves Costs
- Improves performance & safety

ABEYON ADVANTAGE

- Phased approach adapted to your organization needs
- Years of experience supporting the federal government achieve its mission through innovation
- Know-how on implementing Artificial Intelligence to build tailored solutions for RCM need
- Expertise in utilizing open-source Large Language Models (LLMs) to identify, analyze and achieve RCM.
- Extensive experience on deploying solutions that are compliant with government cybersecurity requirements such as NIST

Abeyon

SBA U.S. Small Business Administration 8(a) Certified

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