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WHITEPAPER

CMMS: Ushering in the Era of Innovative and Cost-effective Maintenance

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In May 2022, the West African nation of Nigeria found itself dealing with one of its worst slumps in oil production in recent history.

Dating back to early 2021, Africa's largest oil producer found itself here due to a lack of security, operations and streamlined technical practices. According to the World Bank, the primary cause of the decline in Nigeria's oil production was poor maintenance practices and the gradual loss of infrastructure efficiencies – proof that even entire nations are not exempt from the repercussions of sub-standard maintenance of assets and infrastructure.[1]

Maintenance can make or break operations. Enterprises often face challenges and consequences that range from poor quality output to declining safety standards. In a 2018 survey, 52% of workers with purchasing responsibilities in manufacturing companies said outdated equipment resulted in disruptions to work at least once a week.[2]

Poor or deferred maintenance can result in recovery costs that are as high as 15 times the total repair cost for a single piece of equipment.[3] This high repair cost be attributed to the loss of production, expensive replacement of assets, and fines due to non-compliance.

Despite the known obstacle of costly consequences, average maintenance performance remains poor across asset-intensive industries, including healthcare, education, and manufacturing. At an enterprise level, managing millions of smart, connected assets, and the large volumes of data that come with it, can prove to be a Sisyphean task. Even with the move from the traditional "pen and paper" approach and the rise of smart facilities and asset management, businesses still need to rethink their approach to monitoring and optimizing assets.

There are several limitations imposed by the pockets of legacy technology that continue to linger in the organizational back end

Common Maintenance Management Challenges

1 Pipeline closures, maintenance drag Nigerian oil output to new lows: https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/oil/060922-pipeline-closures-maintenance-drag-nigerian-oil-output-to-new-lows

2 Outdated equipment effects 52% of manufacturing workers: https://www.engineeringspecifier.com/around-the-industry/outdated-equipment-effects-52-of-manufacturing-workers

3 11 [Costly] Dangers of Deferred Maintenance in Facilities: https://cdn2.hubspot.net/hubfs/479873/bonus%20content/deferred-maintenance.pdf?__hstc=1717358.1c64ba3b947c210bac351ba9a0f6ef0a.1654859628017.1654859628017.1654859628017.1&__hssc=1717358.1.1654859628018&__hsfp=1102210786&hsCtaTracking=7a68f049-694d-472c-82ad-9d80c7627187%7Cabd0af02-5993-4b04-bfc8-eede837b6d8b

What's Stopping Enterprises from Acing Maintenance Management?

Modern maintenance practices and principles have been around for more than 50 years, established in the late 1970's by F. Stanley Nowlan and Howard F. Heap.[4] Despite decades of existence, a large persisting knowledge gap in the global maintenance community has given rise to a wide disparity in capability. This has led to significant fragmentation of the maintenance framework, which in the digital age, has taken the form of siloed information and disparate enterprise technology. The segmenting of practices has trickled its way into industry standards and online resources, causing the disparity to compound.

To cater to the advent of this disjointed maintenance framework, maintenance solutions have themselves undergone several fragmentations, with components often overlapping in both application and area of use. Today, the industry has several solutions developed for specific industries and assets. The mix of larger players, small fast-growing firms, and smaller slower-growth legacy vendors has led the market to be both fractured and rife with competition.

The absence of a clearly defined software ecosystem and the perpetuating knowledge gap makes it difficult for organizations to design their maintenance activities around reliability. Large volumes of "bad data" (mixed in with good, usable data) further impedes enterprises from leveraging the full potential of a modernized maintenance management framework.

> **Most enterprises do not pay enough attention to reliability when designing their maintenance framework.**

A major roadblock to the evolution of digital maintenance is the concept that maintenance is a cost center for organizations. For a majority (53%) of organizations, maintenance is delegated less than 10% of the entire operating budget. In 2019, 56% of organizations relied on a run-to-failure, reactive maintenance model.[5] The result— more than 51% of unscheduled downtime is attributed to some form of maintenance shortfall.[6]

Common Causes for Unscheduled Downtime

- Aging equipment
- Mechanical failure
- Operator error
- Lack of time to perform maintenance
- Lack of proper training
- Lack of maintenance

4 Reliability-Centered Maintenance: https://www.chemicalprocessing.com/assets/Media/MediaManager/Nowlan-Heap-Reliability-Centered-Maintenance-part1.pdf

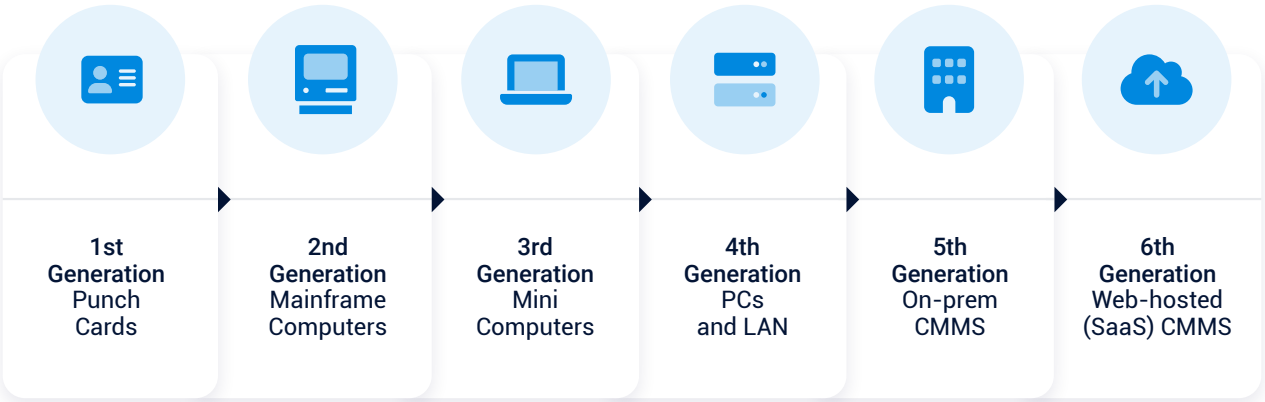
5 Plant Engineering Maintenance Report 2019: https://www.plantengineering.com/wp-content/uploads/sites/4/2019/02/Plant-Engineering-2019-Maintenance-Report.pdf

6 ibid, 5

CMMS: A New Era for Maintenance Management

Since it's introduction in the 1960s, computerized maintenance management systems (CMMS) have been using mathematical reasoning to help enterprises document, standardize, and verify the maintenance management process across industries. CMMS has proven out such an ROI that many of them have evolved, transformed, and even metamorphosed into their more modern, larger scale counterparts, including enterprise asset management (EAM).

The Evolution of CMMS[7]



CMMS was born out of a trifecta of maintenance challenges:

- **The manual approach** to work order processing
- **The lack of access** to relevant information
- **The growing demand** for quality assurance and quality control

With the advent of CMMS, enterprises used mainframe computers to unlock the digital means to not just simplify work order processing and enhance maintenance management, but also gain access to valuable data generated by the system. While this data pool was rich with potential insights, it was also unfiltered— a mix of good and bad data.

Lost opportunities stemming from the lack of a clean, rich data pool led enterprises to invest heavily on technical know-how and digital resources. Subsequently, this gave rise to unprecedented expenses. Businesses soon realized that hosting a CMMS on on-premises servers meant significant capital expenditures, sluggish growth, and a vicious cycle of dealing with server-end. Using CMMS with an on-premise infrastructure was simply unsustainable in the long run.

7 The Evolution of Affordability and Accessibility in CMMS Software: https://www.americanmachinist.com/enterprise-data/article/21898450/the-evolution-of-affordability-and-accessibility-in-cmms-software

The Cloud: The Ultimate Game Changer

The era of cloud-based CMMS changed the way enterprises owned maintenance management. Over the past two decades, cloud technologies emerged as a decisive factor for the rapid uptake of CMMS.

By leveraging a SaaS-based subscription model, enterprises have been able to simplify work order processing and, with added cloud computing capabilities, gain access to clean, usable maintenance data. The cloud also made CMMS more accessible for small and medium businesses (SMBs) while cutting back on costs for larger companies.

By implementing a cloud-based CMMS, companies can reduce overhead related to server maintenance, security, and scalability. Aside from the cost-savings, the essential advantages of the cloud include data accuracy, higher productivity, and the elimination of manual data capturing. This new generation of CMMS empowers enterprises to go beyond seeing maintenance as a cost center and realize the potential business benefits through three key performance indicators— innovation, cost-effectiveness, and ROI.

Innovation

CMMS is a tool that digitizes the maintenance process. It promotes enterprise-wide innovation through automation due to the rapid digitization of facilities and the emergence of smart assets. Implementation of increasingly superior maintenance automation is a response to the data-intensive nature of cloud-based CMMS. Traditionally, maintenance managers receive work requests via calls, sticky notes, and other modes of communications that are difficult to track. The manual creation of work orders and information management meant the maintenance teams lost hours of efficiency and accuracy. Now, many of the CMMS automation tools focus primarily around work order processing.

CMMS simplifies work order planning and assignment. It is capable of automatically classifying work orders based on specified criteria, including resource availability, spare part availability, tool availability, and safety and plant/equipment shutdown requirements. It assists maintenance teams in creating detailed job checklists to eliminate any ambiguity around an assigned task—critical for insurance or regulatory purposes. Most importantly, CMMS integrates with existing enterprise applications like enterprise resource planning (ERP) and EAM. This allows businesses to have complete visibility into assets and inventory in order to accurately plan resource utilization and time management.

The intelligence to create visibility, collect and view data, and automate time-consuming tasks makes CMMS a necessity, particularly for asset-intensive enterprises. The scope of innovation through CMMS is set to expand with the rise of the internet of things (IoT) and lossless 5G networks. In the future, enterprises will be able to use sensors to feed real-time asset and facility data to the CMMS giving maintenance teams make accurate decisions and forecasts about asset health.

Cost-Effectiveness and ROI

The most commonly discussed benefit of CMMS is cost-reduction. These solutions can significantly reduce downtime of equipment and operations when focused on reliability-centered maintenance - a mix of corrective, preventive, and predictive maintenance approaches. For every minute of downtime, enterprises could deal with financial repercussions as high as $22,000 for every minute. So, the initial investment in a CMMS will provide an actionable return on investment shortly after implementation.[8]

CMMS help to optimize equipment by scheduling maintenance tasks during periods of low impact or non-usage of equipment. This minimizes the financial burden of scheduled downtimes. The guarantee of healthy equipment and facilities reduces the risk penalties due to safety issues and regulatory failures.

Computerized maintenance management systems enhance service quality and enable quicker response times due to the prolonged equipment life cycle. Managing maintenance operations and the overall viability of equipment promotes better collaboration and informed decision-making. The recorded maintenance history allows businesses to keep a tab on recurring service and maintenance costs.

8 Unplanned Downtime Costs More Than You Think: https://www.forbes.com/sites/forbestechcouncil/2022/02/22/unplanned-downtime-costs-more-than-you-think/?sh=501f79a536f7

From built-in inventory control tools to a structured and automated task allocation system, CMMS solutions provide incredible ROI. The long-term cost and time savings from implementation of preventive and predictive maintenance tasks, automation tools and digitized processes means that a CMMS solution will quickly pay for itself.

Inventory Control Capabilities of CMMS

- Minimum and maximum quantity thresholds
- Low inventory alerts
- Single source of truth for vendor and parts details and costs
- Purchase order generation
- Insights on usage and costs

Getting CMMS Right with TMA Systems

CMMS is essential for modern organizations that have countless assets and sprawling facilities to maintain. In order to best serve their clients and employees, organizations must take a step back and ask a few necessary questions like,

> **What is the extent to which we need automation?**

> **What is the current maintenance approach we are following? Is it working?**

Asking insightful questions can help organizations save time and money when it comes to choosing the right CMMS solution. The largely fragmented market often makes it difficult for enterprises to identify the exact maintenance requirements that need attention. This is where a strategic partner like TMA Systems can help.

For more than 30 years, TMA Systems has been providing maintenance management solutions to enterprises across manufacturing, healthcare, education, corporate, and public sectors. The easily configurable products are designed to cater to the facility management needs of enterprise. With comprehensive technical support available 24/7, TMA Systems has emerged as a partner of choice for several world-leading organizations. Our industry-agnostic, diverse experience ensures that our partner enterprises are adequately enabled to leverage an innovative and cost-effective CMMS solution.

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Empowering facilities management teams with powerful asset maintenance and management solutions

TMA Systems provides facilities and asset management solutions that can be easily configured to your needs (CMMS, EAM or IWMS). For more than 30 years, TMA has provided reliable, innovative, and trusted software solutions that help facility executives deliver value by reducing downtime, increasing maintenance productivity, improving equipment reliability, and saving money.

WebTMA, our flagship solution, provides all the functionality you need to manage and maintain your capital assets while optimizing maintenance team productivity.

Want to know how TMA Systems can help your enterprise leverage state-of-the-art CMMS technology?

Contact us at
sales@tmasystems.com

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