PREMIER TECH

MES as a Service: A more pragmatic approach to managing your manufacturing operations

How a new generation of solutions is bucking perceived notions that MES software is a clunky beast too complex to tame

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Introduction

If you're a manufacturer, you have probably heard of and maybe even believed the bad rap traditional manufacturing execution systems (MES) have gotten over the years. Rigid systems. Long deployment timelines. Sky-high costs. Complicated to use and not tailored to a specific business. Never-ending integration and maintenance issues. Skyrocketing system operating costs that are higher than expected. The list goes on and on.

But what if we told you that a new generation of MES providers are tackling all those issues head on?

This is where MES as a Service steps in—a cloud-powered game-changer that flips the script on outdated systems. MES as a Service provides your factory floor with real-time insights to continuously improve operations and reach your goals. It also contributes to improving efficiency and drastically reducing the software's complexity from the get-go.

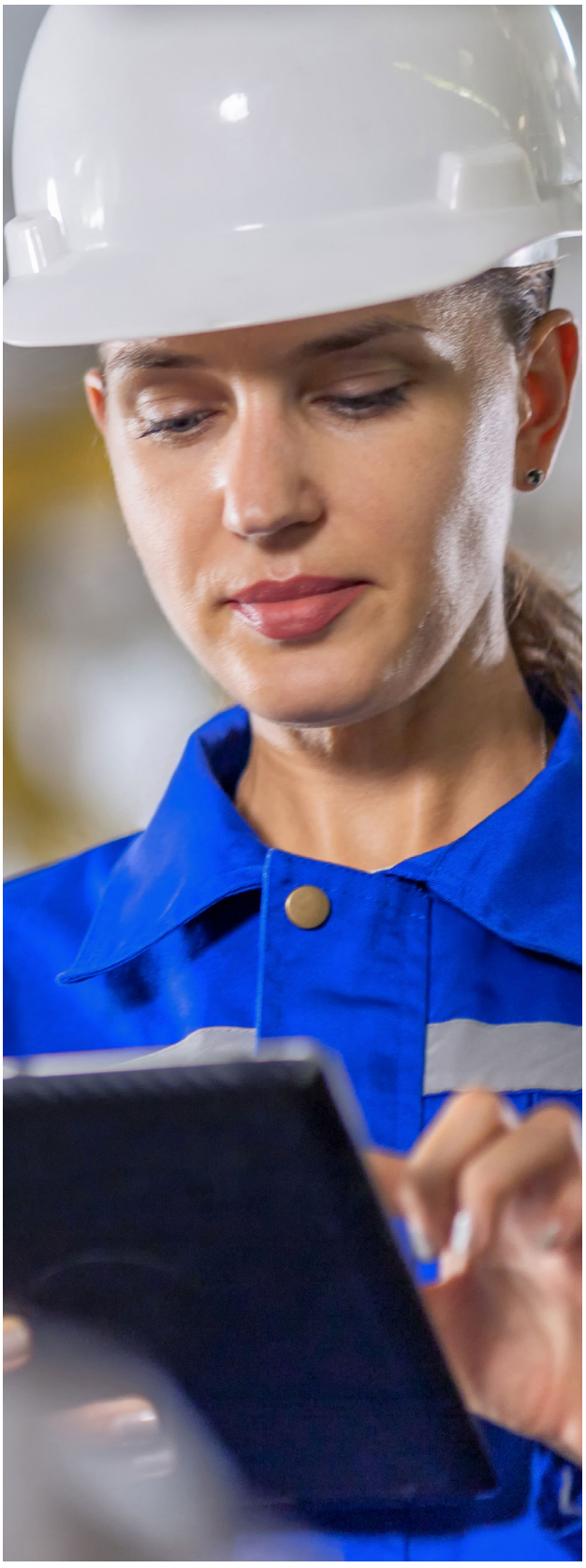
This guide will show you how MES as a Service is levelling the playing field for small—and medium-sized manufacturers, putting powerful production management tools within everyone's reach. Let's explore how MES as a Service makes it happen.

What is a MES?

Many of today's manufacturers face ongoing challenges when it comes to accessing and leveraging production floor data effectively. A Manufacturing Execution System (MES) addresses these challenges by connecting directly to equipment, collecting real-time data through sensors, API's, and system integrations (ex. : ERP, PLC, SCADA, etc.), and providing actionable insights via monitoring dashboards.

A MES gives factory managers and supervisors a comprehensive view of equipment status and overall effectiveness (OEE), total resource efficiency (TRS), work order completion, human and material resource usage, and maintenance requirements.

More advanced MES deployment can also allow teams to access full-depth traceability and genealogy, ensuring that every step in a production process is executed according to predefined standards, from raw material handling to final product assembly and shipment. This level of control and traceability greatly improves product quality and facilitates regulatory compliance.



Types of MES deployments

Broadly speaking, there are three types of MES deployments.

On-premise MES software | **Platform as a Service (PaaS) MES** | **MES as a Service**

On-premise MES software

On-premise MES software is installed and directly run on the physical servers and infrastructure within a company's facilities. Because the solution resides within a company's IT and OT environment, it can be fully customized to meet specific operational and industry-specific needs as well as integrated with other in-house systems.

The disadvantages of on-premise are multiple, which inevitably leads to a long time to value.

- High upfront investment: Beyond the software, on-premise solutions require extensive hardware, robust IT and networking equipment, physical servers, etc.
- Deploying hardware and servers in the company's infrastructure can add months to the initial MES deployment project
- Complex configurations, customization and costly maintenance that can burden internal teams and require vendor expertise and third-party consultants
- An MES, like any complex software, requires regular maintenance and software updates, adding an extra workload to the IT team
- Operating your own hardware limits ongoing costs but limits scalability. As the usage of the MES expands, so will the infrastructure requirements. Balancing provisioning servers to meet potential future needs without over-investing can get complex, while running an MES on hardware that cannot meet the demand can impact manufacturing operations.
- Expensive long-term maintenance (hardware upgrades, software updates, security patches, system monitoring, etc.)
- You are responsible for all of the cybersecurity work. Your OT network not being connected to the Internet does not reduce security requirements. Learn more

Types of MES deployments

PaaS MES (Platform as a Service)

Platform as a Service MES (PaaS) provides a cloud-based platform for creating, customizing, and running applications, while the provider manages the underlying infrastructure.

For MES, PaaS enables extensive customization, including fully tailored screens and modules. For example, a manufacturer could create a custom OEE dashboard that calculates performance using their own unique formulas or KPIs, design specialized downtime tracking modules to capture detailed root causes beyond standard categories, or develop advanced quality control workflows that provide full product traceability across batches and shifts. These capabilities allow teams to connect quality data directly to production records, ensuring that issues can be traced back to specific equipment, operators, or raw material lots.

However, this flexibility can introduce challenges:

- Updates to the PaaS platform may impact these custom features
- Requiring additional development
- Regression testing
- Validation before the system is fully operational again

This can increase both time-to-value and the burden on IT and operations teams.

Key Considerations for PaaS MES

While PaaS-based MES solutions offer significant flexibility through highly customizable modules and tailored screens, this level of customization introduces certain operational considerations. Platform updates, for instance, can sometimes impact custom features, requiring additional development, testing, and validation before the system can resume full operational capacity.

In complex implementations, these updates may lead to temporary production interruptions, particularly if custom modules are tightly integrated with critical workflows such as OEE tracking, downtime reason analysis, or quality control and traceability. Moreover, while PaaS typically reduces infrastructure and upfront costs, the maintenance and operational effort associated with managing extensive customizations can, in some cases, approach that of an on-premise MES deployment.

Understanding these dynamics is essential for manufacturers to accurately assess the total cost of ownership and the risk-benefit balance of adopting a PaaS MES solution

Types of MES deployments

MES software delivered as a Software as a Service, or MES as a Service

MES software delivered as a Software as a Service, or MES as a Service is delivered, managed and maintained by the software by the software's provider. The software is delivered and managed by a third-party partner, from the IT infrastructure to the software updates and maintenance. Of all the deployment method, Software as a Service places the smallest possible configuration, management and security burden on the user. It leaves most of the heavy lifting to the publisher.

For small and medium manufacturers, choosing a MES as a Service means you pay a monthly fee for what you use, and you can scale with new features and capabilities as the production environment evolves or demand increases. This level of agility means that, depending on a production floor's functional needs, the time to value can be achieved in just a few months. Gone are the days of legacy MES software's hefty investments as well as integration and maintenance hassles!

Depending on the MES as a Service vendor, the level of customization may be limited, if not impossible. Not all MES as a Service providers offer development services or may restrict them to only top-tier, top-paying customers. Nevertheless, a new generation of MES partners, like Premier Tech Digital's OpRize MES as a Service, can offer the best of both worlds: a highly configurable MES with rapid and easy deployment.

Comparative Overview of MES Deployment Solutions

The table below presents a comprehensive comparison of MES (solutions across three deployment models. Each model is evaluated based on key criteria such as upfront investments, implementation time, IT burden, required expertise, support plans, cybersecurity risks, technological obsolescence, and time-to-value. This comparison aims to help manufacturers assess the best-fit solution for their operational needs and strategic goals.

Table 1: Comparative Overview of MES Deployment Solutions

Criteria	SaaS MES	PaaS MES	On-premise MES
Upfront Investments	**Low to moderate** Subscription-based with no need for extensive hardware	**Low to moderate** No need for extensive hardware	**High** Requires extensive hardware, networking equipment, physical servers
Implementation Time	**Fast** Typically weeks to a few months	**Fast to moderate** Can take several months depending on customization needs	**Long** Deployments require purchasing and installing new servers for test and production environments, adding to the project timeline
Time Commitment Needed By It/Other Teams For Configuration And Maintenance	**Minimal** Handled by the SaaS provider	**Moderate** Some responsibility on the company for application management	**High** Complex configurations and maintenance fall on internal teams
It Expertise Required	**Low** Little in-house expertise needed	**Moderate to high** Depending on the type of cloud solution, IT team's involvement in securing and maintaining the MES software can vary	**High** Server management, updates, MES software management and updates are all skills required to keep the system running with proper performance level
Support Plans	**Included in subscription**	**Extra costs**	**Extra costs**
Cybersecurity Risk	**No responsibility** It is all on the provider	**Moderate** MES and server infrastructure security is shared responsibilities between the customer and the cloud provider	**High** Companies are responsible for securing and maintaining the infrastructure and MES, even if deployed on a network not connected to the internet

The top misconceptions about SaaS-based MES

There is no difference between on-premise and cloud-based MES.

A cloud-based MES is like on-premise software as it is installed on servers. With a cloud-based MES, the management of the server mostly rests on the shoulders of the cloud provider, whereas with on-premise software, the scaling and management of the server on the company's team.

The monthly subscription fees make it expensive. A one-and-done investment is better.

Not really. Like any SaaS, you pay only for what you use. Your company doesn't have to spend money on IT infrastructure and networking, maintenance and upgrades, etc. You don't have to hire IT resources, either. SaaS monthly fees include almost everything.

SaaS means another business can access and control my data.

A MES as a Service is no less secure than other deployment methods. In reality, reputable SaaS providers implement advanced security measures, including strong governance, data encryption, multi-factor authentication, regular security audits, and continuous monitoring. What's more: the biggest cybersecurity threats come from inside an organization—not from trustworthy SaaS providers.

SaaS = zero flexibility and customization.

Not really. Modern SaaS solutions, like Premier Tech Digital's MES as a Service, are highly configurable based on a manufacturer's business logic, functional needs, and operational goals.

Tips for choosing the right SaaS-based MES partner

Not all SaaS-based MES are created equally. Here are some criteria to explore with different vendors:

Table 2: Criteria for Choosing the Right MES and Questions to Ask the Vendor

Criteria	What questions to ask?
Vendor manufacturing expertise	• Is the vendor a software developer or a MES technology company with experience in manufacturing? • Do you have any case studies and customer referrals?
MES flexibility	• Can the MES be used for batch, discrete and process manufacturing? • Does the deployment require configuration or custom development? • What third-party systems can your MES integrate with? • How can I scale my MES?
Deployment	• What are the typical stages of a MES deployment? • How long does a typical deployment take? • Who from my team has to be involved and to what extent? • I have a small/no IT team. How can you help?
Security	• Where is my data stored and are your services shared? • Do you have automated backups? • On what platforms can I access the data? • Can some data be restricted to only certain users? • How do you ensure data privacy and compliance? • Does the vendor use public clouds (Azure, AWS, Google, etc.) or does it provide the infrastructure. What is the level of certifications?

Criteria	What questions to ask?
Ease of use	• How intuitive is your MES? • Are the interfaces easy to use? • What are the typical training and onboarding times? What services do you offer?
Vendor Support	• What are your technical support services? • How fast can we get support if there is a problem? Do you have support evenings and weekends? • How do you handle downtimes or other disruptions?
Cost structure	• What are the costs associated with subscription plans, licence renewals, upgrades, required infrastructure? • What are the costs for training, technical support, etc.? • What are the fees for configuring the MES for my operational needs and business logic?
ROI and time to value	• What solution offers the fastest ROI? • What will the long-term software and server upgrade and maintenance costs be? • Which solution allows me to glean insights to make fast operational gains? • Which solution delivers the lowest Total Cost of Ownership (TCO) over 3 years?

Understanding the 3-Year Total Cost of Ownership (TCO) of a MES: SaaS, PaaS or On-Premise

The choice of deployment model for a Manufacturing Execution System (MES) has a direct impact on its Total Cost of Ownership (TCO). Over a three-year horizon, it is essential to assess not only the upfront investments, but also all ongoing and hidden costs associated with each model. A SaaS solution (Software as a Service) typically spreads costs over the duration of the contract and includes maintenance, updates, and infrastructure.

In contrast, an on-premise MES requires significant upfront investment in servers, perpetual licenses, integration, and security, in addition to ongoing demands on internal IT teams. Paas MES solutions offer a compromise between flexibility and technical responsibility, but can lead to additional costs due to customization, cloud service management, and shared maintenance responsibilities.

Comparing these models helps companies anticipate actual costs more accurately and avoid unexpected expenses—such as increased internal resource allocation, costly support agreements, or major system upgrades.

Table 3: Costs to Consider – Between MES models

Cost Categories	SaaS MES	PaaS MES	On-Premise MES
Pre-deployment			
Software subscription fees	**Low** Included in subscription; cost varies with users, equipment, modules	**Low** Included; similar to SaaS; some platform fees possible	**High** Initial license + maintenance
Deployment / implementation	**Low** Light configuration	**Medium** Requires configuration and minor custom integrations	**High** Full deployment and configuration costs
Capacity / IT architecture studies	**Low** Minimal effort required	**Low** Minimal effort; some platform setup needed	**High** Required to size servers, storage, network

Cost Categories	SaaS MES	PaaS MES	On-Premise MES
Deployment – Infrastructure			
Hardware Purchase (edge devices)	**Low** Minimal required	**Low** Minimal required	**High** Full servers, storage, network
Physical Servers	**Low** Not required	**Low** Mostly managed by provider	**High** Required
Network (switches, firewalls, load balancers)	**Low** Not required	**Low** Mostly managed by provider	**High** Required and managed
OS / Database Licenses	**Low** Included	**Low** Mostly included in platform	**High** Must purchase and maintain
Virtualization (VMware, Hyper-V, etc.)	**Included** Not required	**Low** Handled by provider	**High** Required
Backup / Disaster Recovery	**Low** Included	**Low** Handled by provider	**Medium** To manage and fund
Application Development / Custom Extensions	**Low** Minimal	**Low to Medium** Depends on platform. May be impacted by platform updates	**High** Required for custom MES functionality

Cost Categories	SaaS MES	PaaS MES	On-Premise MES
Post-deployment (3 Years)			
Training	**Low** Included	**Low** Included	**Medium** Depends on vendor/contract
Hardware Replacement / Upgrade	**Low** Not required	**Low** Minimal responsibility; mostly provider	**High** Must manage and fund
Software Updates	**Low** Included	**Low** Mostly included; minor platform updates possible	**Medium** Not included, separate maintenance
24/7 Support	**Low** Included	**Low** Included or extra; depends on plan	**Medium** Not included
Internal IT Team Workload	**Low** Not required	**Low to Medium** Some monitoring or integration tasks	**Very High** Deployment, maintenance, support
IT Infrastructure Maintenance	**Low** Not required	**Low** Mostly managed by provider	**High** Must manage
Hosting / Datacenter Space	**Low** Included	**Low** Included	**High** Must manage
Hosting / Datacenter Space	**Low** Included	**Low** Included	**High** Must manage

Cost Categories	SaaS MES	PaaS MES	On-Premise MES
Hidden Costs			
Capital Expenditure	**Low** Not required	**Low** Mostly not required	**High** Significant hardware investment
Hardware Obsolescence	**Low** Not applicable	**Medium** Depends on platform lifecycle	**High** Aging hardware must be replaced
Cybersecurity (Internal Management)	**Low** Included	**Low** Mostly handled by provider	**Medium** Must manage internally
Scalability	**Low** Native and simple	**Low to medium** Scalable but some platform constraints	**Medium** Complex / limited
Loss Of IT Knowledge Over Time	**Low** Not applicable	**Medium** Some internal knowledge needed for platform use	**High** Depends on staff turnover
Insurance / Hardware Risk Management	**Low** Not applicable	**Low** Minimal; mostly provider responsibility	**Medium** Must be planned
Downtime Related To Infrastructure Maintenance	**Low** Included in saas	**Low** Mostly included; minor platform maintenance possible	**Medium** Depends on server upkeep
Downtime And Restart Risk	**Low** Constant monitoring	**Medium** Depends on platform integration	**High** Complex restart in case of failure
Regulatory compliance	**Low** Managed by saas provider	**Medium** Platform may require configuration	**High** Internal responsibility, often neglected

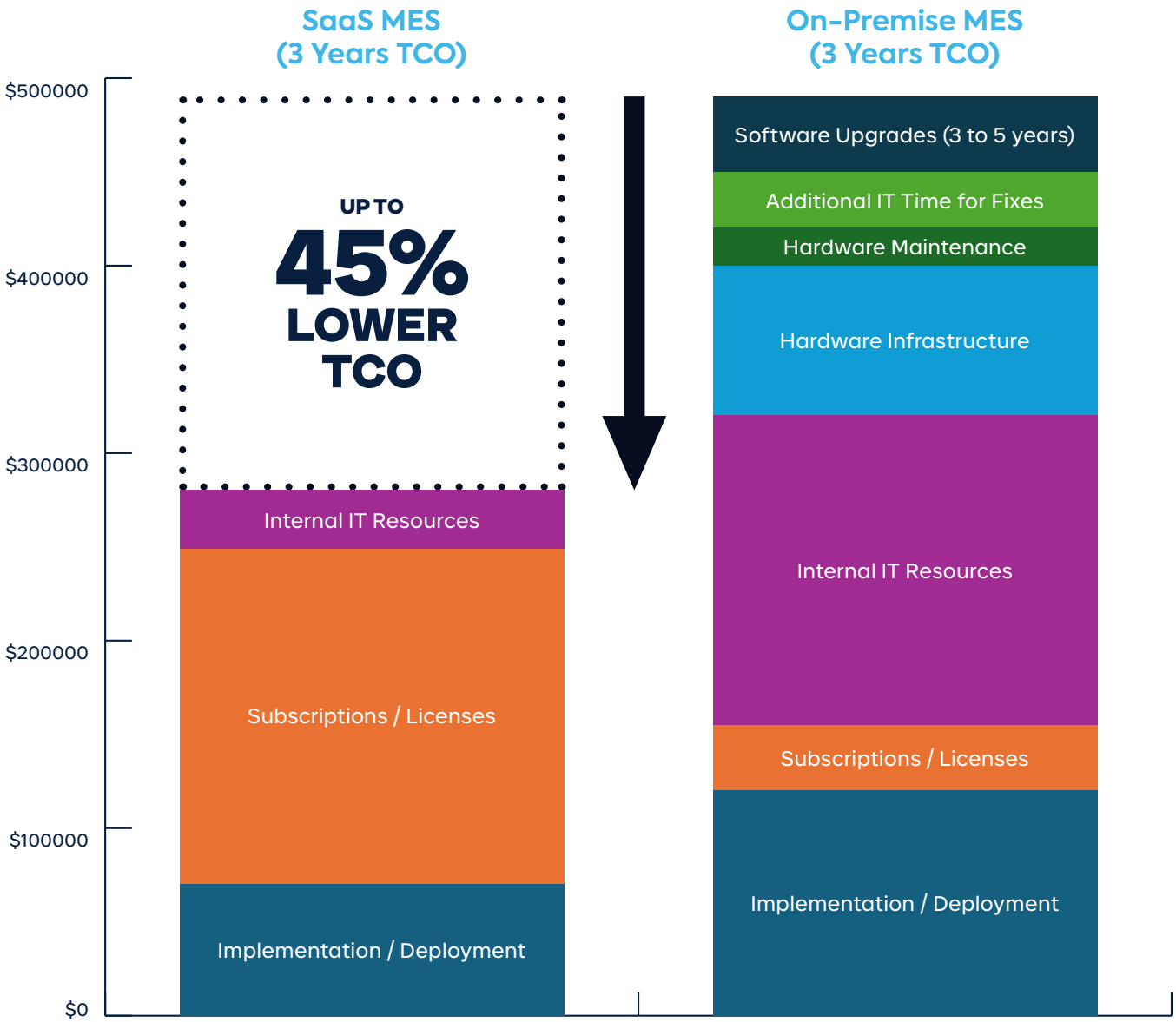
A Total Cost of Ownership Advantage for SaaS

Over a 3-year period, detailed cost analysis shows that the SaaS model can result in up to 45% lower Total Cost of Ownership (TCO) ***(see Graph 1 below)*** compared to an on-premise solution. This cost reduction is largely driven by lower upfront investment, the elimination of physical infrastructure requirements, reduced demand on internal IT teams, and the avoidance of many hidden costs tied to maintenance, software upgrades, and aging technology.

In contrast, the MES on a public or a private cloud, while reducing some IT burdens, still retains many of the costs and responsibilities found in on-premise solutions, especially in terms of customization, maintenance, and platform management.

Ultimately, SaaS emerges as the most cost-effective and scalable option over time, while also enabling faster deployment, easier upgrades, and seamless access to the latest features and security standards.

Graph 1: SaaS MES vs On-Premise MES – 3-Year Savings



Conclusion

The era of clunky, expensive, and hard-to-manage MES systems is over. MES as a Service represents a pragmatic, modern approach that puts powerful production management tools within reach for manufacturers of all sizes. By leveraging a cloud-based, subscription-driven model, companies can achieve real-time visibility, improve efficiency, reduce IT burdens, and scale operations without the heavy upfront investments and hidden costs associated with traditional on-premise solutions.

Over a three-year horizon, detailed cost analysis shows that SaaS MES can deliver up to 45% lower Total Cost of Ownership (TCO) compared to on-premise deployments, while enabling faster deployment, easier upgrades, and continuous access to the latest features and security standards.

For manufacturers looking to optimize operations, improve responsiveness, and achieve measurable ROI quickly, MES as a Service is not just a solution—it's a strategic advantage. The choice is clear: simplify, scale, and succeed with SaaS MES.

In today's fast-paced manufacturing environment, choosing the right MES solution is critical for optimizing operations and maximizing ROI. Compared to PaaS MES and On-Premise MES solutions, a SaaS MES stands out due to its faster deployment, lower upfront costs, reduced IT burden, and the ability to scale effortlessly. With SaaS, manufacturers benefit from continuous updates, enhanced cybersecurity, and seamless integrations, all while focusing on what matters most—driving productivity and innovation.

Interested in learning more about Premier Tech Digital's OpRize?

Visit our website today : ptdigital.com

Prefer scheduling a demo?

Contact one of our MES experts