

EXECUTIVE BRIEF

THE IMPORTANCE OF BEING A LEADER WHEN SELECTING A PARTNER

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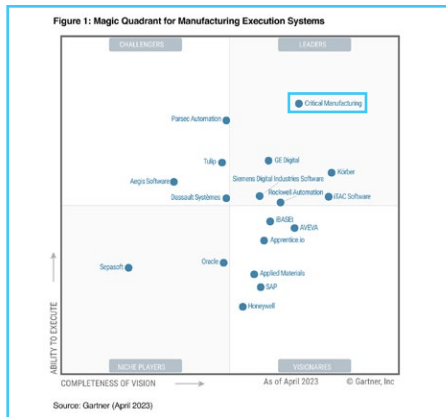
Critical
manufacturing
an ASMPT company

CRITICAL MANUFACTURING: LEADING TODAY, TRANSFORMING TOMORROW

What defines an industry leader? Is it innovation, adaptability, or the ability to consistently deliver value across diverse markets? For Critical Manufacturing, leadership means embodying all these qualities while pushing the boundaries of what Manufacturing Execution Systems (MES) can achieve. We take immense pride in being recognized as a leader in MES by

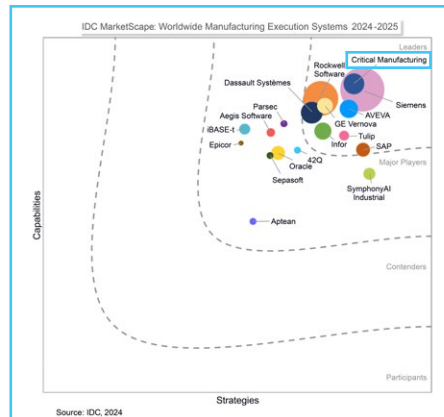
some of the most respected analysts in the industry, including [Gartner](#), [IDC](#), and [Frost & Sullivan](#). These accolades are not just reflections of past successes but validations of our company's ongoing commitment to excellence, adaptability, and customer impact.

GARTNER



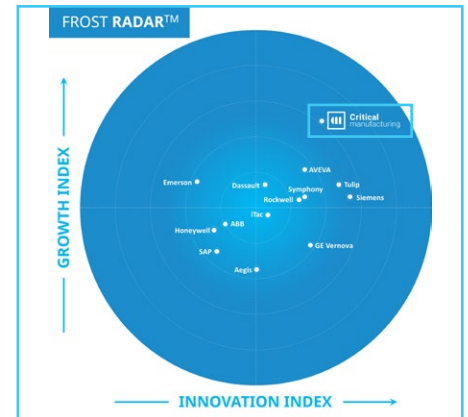
[Gartner](#) has consistently placed Critical Manufacturing as a Leader in its [Magic Quadrant for Manufacturing Execution Systems](#), a position earned through exceptional customer satisfaction and technological innovation. Gartner highlights the company's ability to deliver advanced solutions that integrate the Internet of Things (IoT), transactional data, and real-time insights into a unified platform. Critical Manufacturing's collaborative approach with systems integrators and its composability of solutions have further cemented its leadership status.

IDC MARKETSCOPE



[IDC MarketScope](#) recognizes Critical Manufacturing as a Leader in its [Worldwide MES Vendor Assessment \(2024-2025\)](#), emphasizing the sophistication and versatility of the company's offerings. IDC praises the advanced modular architecture, digital twin capabilities, and intuitive low-code tools that allow manufacturers to adapt quickly and efficiently. IDC also highlights Critical Manufacturing's ability to provide scalable solutions tailored to industries such as semiconductors, medical devices, and electronics, making it a standout in the MES landscape.

FROST & SULLIVAN



[Frost & Sullivan](#) has similarly spotlighted Critical Manufacturing in its [MES Radar™ report](#), ranking us as the vendor with the [highest growth potential](#) and among the top three for innovation and industry disruption. They see us as a company that not only delivers cutting-edge solutions but also supports customers effectively on their Industry 4.0 journey. Our reputation for innovation, strong partnerships, and a customer-centric approach positions us as a key player in the MES space. According to Frost & Sullivan, our commitment to excellence and future-ready solutions makes us a strong contender for market leadership.

We are driven by a deeper purpose: “Making Industry 4.0 a Reality”.

These recognitions share a common theme: Critical Manufacturing is not just leading—it is redefining what leadership means in MES. Analysts universally praise the company’s ability to marry cutting-edge technology with customer-centric solutions, creating a balance that drives both innovation and practical value. This consistency across evaluations reflects a deep commitment to helping manufacturers navigate the complexities of Industry 4.0 while preparing them for the opportunities ahead. We don’t just deliver software; we deliver tools that drive agility, scalability, and efficiency.

Leadership is about more than accolades—it’s about setting a standard for the industry, driving innovation, and consistently delivering value to customers. Yet, MES leadership is only part of our story. While MES is at the core of what we offer, our vision extends far beyond software functionality. We are driven by a deeper purpose: “Making Industry 4.0 a Reality”.

Figure 1: Magic Quadrant for Manufacturing Execution Systems



Source: Gartner (April 2023)

Figure 1: Magic Quadrant for Manufacturing Execution Systems



Source: Gartner (May 2022)

Figure 1: Magic Quadrant for Manufacturing Execution Systems



Source: Gartner (March 2021)

A VISION THAT INSPIRES, A MISSION THAT DELIVERS

A vision is more than a statement—it is the beacon that guides every decision, innovation, and action a company takes. For Critical Manufacturing, our vision, **“Making Industry 4.0 a Reality”** encapsulates our ultimate aspiration: a future where manufacturing ecosystems are smart, agile, and seamlessly connected. But achieving this vision isn’t just about deploying a suite of technologies. It’s about understanding the pivotal role MES plays as the **core enabler** of Industry 4.0.

This philosophy underpins every decision our company makes, from designing modular solutions to building partnerships that amplify its global impact. Looking ahead, our focus remains on driving the next evolution of smart manufacturing. As industry needs evolve, so will we—continuing to challenge conventional thinking, anticipating new challenges, and delivering solutions that empower manufacturers to be future-ready. We believe leadership is not just about being at the forefront of innovation today but ensuring our customers stay ahead of tomorrow’s demands.

The fourth industrial revolution, often referred to as “Industry 4.0” is the era we are living in today—an era of rapid transformation driven by the development and convergence of many new technologies such as IoT, AI, digital twins, AR/VR, blockchain, and cloud computing. The term “Industry 4.0” itself was popularized in 2011 at the Hannover Fair as part of Germany’s High-Tech Strategy, introducing a specific vision of the future—one where smart, connected, and autonomous manufacturing would redefine the industrial landscape.

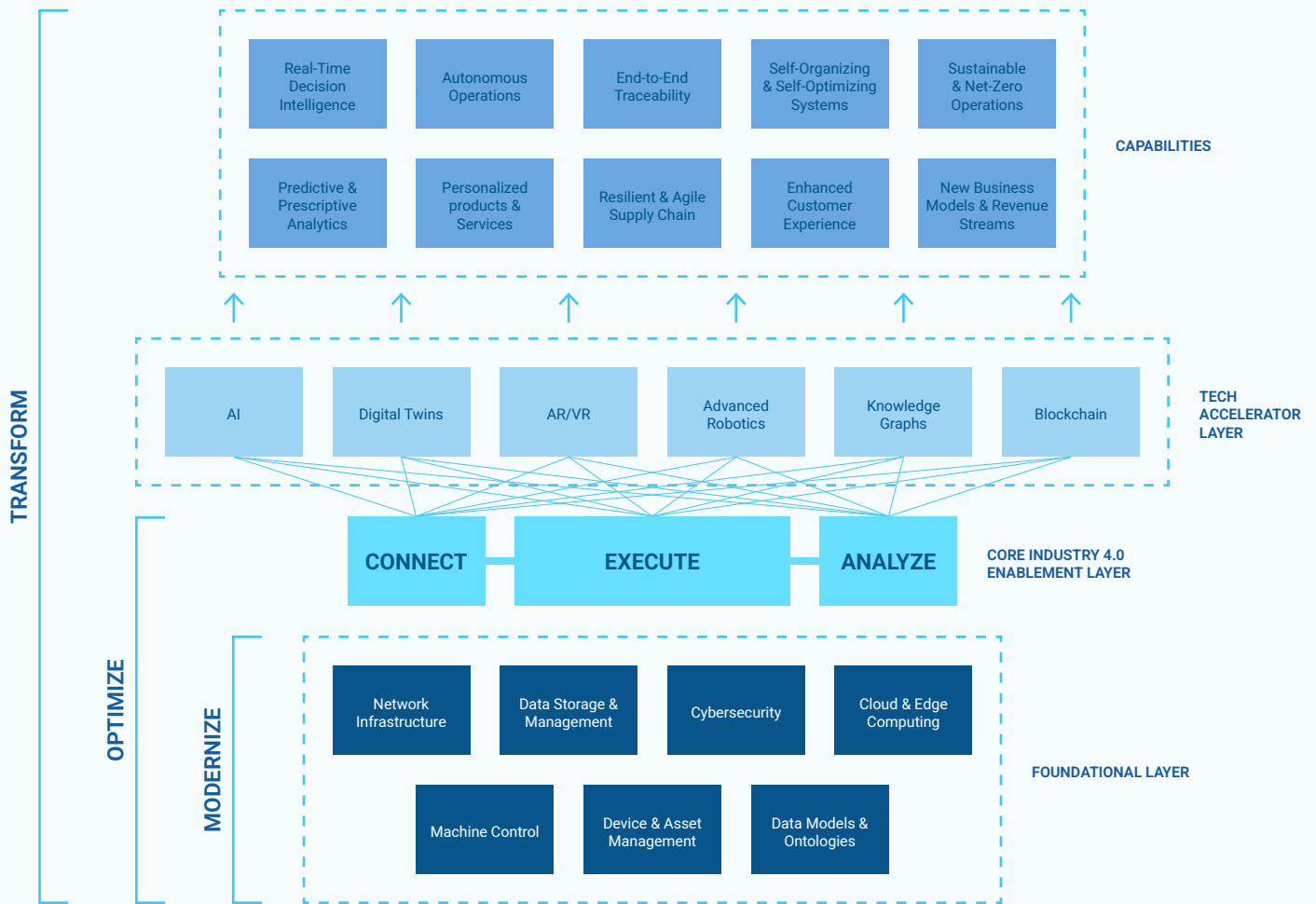
However, since then, the idea of Industry 4.0 has grown dramatically and evolved to mean different things to different people, often encompassing a broad range of concepts and technologies. Achieving this vision requires more than just adopting new technologies; it demands having the right systems, processes, infrastructure, and tools in place to enable true industrial transformation.

THE THREE PILLARS OF INDUSTRIAL TRANSFORMATION

Achieving Industry 4.0 requires three essential pillars: **Execution, Connectivity, and Analysis**. Each of these elements plays a crucial role in enabling manufacturers to achieve true digital transformation and operational excellence.

- **Execution:** Guiding, controlling, operating, and managing all shop-floor operations is critical to ensure quality, efficiency, and flexibility in production. This encompasses everything from resource allocation and workflow management to enforcing compliance and maintaining real-time responsiveness. This is where MES lives, serving as the system that orchestrates and optimizes these essential functions.
- **Connectivity:** The ability to connect systems, machines, and devices is fundamental to breaking down silos and enabling a truly integrated enterprise. This is where IoT comes into play, allowing seamless communication between sensors, machines, and enterprise applications. IoT-driven connectivity ensures that data flows effortlessly across the organization, providing the necessary foundation for informed decision-making and agile operations.
- **Analysis:** Extracting real-time insights from complex, contextualized data is essential to optimizing operations and preventing potential issues before they arise. Advanced analytics empower manufacturers to move from reactive to proactive decision-making, identifying trends, forecasting demands, and improving overall efficiency with actionable intelligence.

Achieving Industry 4.0
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WHY MES IS THE CORE OF INDUSTRY 4.0

At Critical Manufacturing, we believe that at the center of this transformation lies the MES. While others may view **MES** as just one of dozens, if not hundreds, of software components in a manufacturing ecosystem, we see it as **the core—the central piece that ties everything together and enables manufacturers to truly harness the potential of these new disruptive technologies.**

Manufacturing is about making things—it's the essence of what manufacturers do. To bring Industry 4.0 to life, manufacturers must bridge two rapidly evolving worlds: the **enterprise level**, which is undergoing its own digital transformation, and the **shop floor**, where products are made, quality is ensured, and efficiency is paramount.

This is where MES shines as the **nervous system** of a manufacturing organization. Just as the nervous system in a body connects the brain to every limb and organ, MES coordinates every aspect of production and ensures all processes align with strategic objectives. MES provides the structure needed to manage complexity, enforce standardization, and drive continuous improvement across operations.

Key reasons MES is the core of Industry 4.0 execution include:

- **Orchestration of Resources:** MES ensures that materials, equipment, and labor are utilized optimally, reducing waste and enhancing productivity.
- **Process Standardization:** By enforcing consistent workflows and best practices, MES helps manufacturers achieve repeatable quality and regulatory compliance.
- **Real-Time Operational Control:** MES delivers the visibility needed to monitor and adjust production processes dynamically, thus preventing disruptions and minimizing downtime.
- **Data-Driven Decision Making:** As a central hub for shop-floor data, MES provides actionable insights that drive efficiency and support strategic planning.
- **Scalability and Flexibility:** MES enables manufacturers to scale operations while maintaining control, adapting quickly to market demands and evolving business needs.



Without MES, even the most advanced Industry 4.0 initiatives cannot deliver their full potential.

MES has evolved from simple production tracking to a powerful platform integrating IoT, AI, and predictive analytics. Over the decades, it has grown in complexity and capability, transitioning from manual data collection to fully automated, AI-driven decision-making systems. As manufacturing grows more complex, MES will continue to play a critical role in scaling operations and driving agility. Our complementary solutions, such as [Data Platform](#) and [Connect IoT](#), enhance MES by providing deeper insights and seamless connectivity, rounding out the essential capabilities needed for true transformation.

Looking to the future, MES will play an even more critical role as manufacturing moves towards autonomous operations, self-optimizing production lines, and AI-driven decision support systems. Its capabilities will expand to include more predictive insights, deeper integration with edge computing, and enhanced user experiences through augmented and virtual reality.

Without MES at the core, manufacturers lack the critical execution layer required to bridge strategic goals with operational reality. Without MES, even the most advanced Industry 4.0 initiatives cannot deliver their full potential. Manufacturers risk implementing disconnected solutions that fail to address the core of their business: making things. As a result, we remain committed to evolving our MES solutions to empower manufacturers to execute their vision with confidence and precision, helping manufacturers navigate the complexities of digital transformation with agility and foresight.

WHY LEADERSHIP MATTERS: SELECTING THE RIGHT MES PARTNER FOR TODAY AND TOMORROW

When considering an MES or embarking on an Industry 4.0 transformation, the choice of partner is as important as the product itself. While the capabilities of today's product are critical—especially when selecting a recognized leader like Critical Manufacturing—what truly matters is the company behind it. Leadership is not just about delivering the best-in-class solutions today; it's about where the company is going, their expertise, and their ability to innovate and guide you through a journey that will take years to complete.

This is why evaluating MES providers should focus not only on the product but also on the company's vision, expertise, and track record of innovation. Below, we explore why leadership matters, both for companies focused specifically on MES and for those undertaking broader industrial transformations.



CONSIDERING OPTIMIZING YOUR EXECUTION?

Whether you're implementing MES for the first time or modernizing your existing system, the decision is pivotal. MES sits at the heart of manufacturing operations, bridging enterprise-level systems with shop-floor execution. The platform you choose today will shape your operations for years, but the company you partner with will determine whether that platform continues to meet your needs as both your business and the manufacturing landscape evolve.

Software is not static. Over the course of 15+ years, we have delivered many product updates – typically one major release per year, along with several minor ones.

1. IT'S ABOUT THE COMPANY, NOT JUST THE PRODUCT

Today's product, no matter how advanced, is just a snapshot in time. What really matters is the trajectory of the company that builds it.

Of all 14 industrial software category markets tracked by IoT Analytics in 2024, Manufacturing Operations Management (MOM) is the only one where no vendor has a double-digit market share. This fragmentation highlights the complexity and specificity of MOM, as manufacturers across sectors and regions require vastly different functionalities, from production scheduling to quality management and compliance. Unlike more standardized systems like ERP, PLM, or EAM, where consolidation among vendors provides a clearer path to dominant solutions, MOM's fragmented market makes selecting both the right product and the right company critical.

MES Implementations Often Take Years

Rolling out an MES solution across multiple sites is not a quick process. At Critical Manufacturing, we've completed hundreds of deployments, 70–80% of which are multi-site projects. On average, a pilot implementation at a first plant takes 6–12 months, while scaling the same solution to a similar site can take 3–4 months under ideal conditions. From our experience, a large-scale project spanning 30 sites typically takes between 6 and 10 years to complete. Let that sink in—10 years. The primary reason for this timeline is customer readiness, not technological capabilities or availability of deployment resources. Many manufacturers take years to prepare for and execute multi-site rollouts due to factors like internal alignment, change management, resource constraints, and operational priorities.

We understand the challenges of long-term implementation and the risks of planning solely around the capabilities of a product as it exists today. Software is not static. Over the course of 15+ years, we have delivered many product updates - typically one major release per year, along with several minor ones. Compared to our competition, this pace of innovation is unmatched. If you start with version 10 of our MES, you could end up with version 20 by the time your deployment is complete. While we can't predict every detail of what version 20 will look like today, we can tell you this: it will have evolved far beyond MES as we know it, transforming into a platform that delivers exactly what manufacturers need to thrive in a rapidly changing world. More importantly, it's not just about where the software ends up—it's about the journey we take with you to get there. With our vision of **"Making Industry 4.0 a Reality"** at the heart of everything we do, we'll guide you every step of the way, ensuring the tools and strategies you use continue to align with your goals and the future of manufacturing.

The iPhone Analogy: A Lesson in Long-Term Commitment

Think of it like buying an iPhone. Some years, Apple has the best phone on the market; some years, another company might pull ahead. But people who buy iPhones don't switch brands every year to chase the top device. Instead, they invest in a long-term ecosystem—an integrated platform and a company they trust to keep delivering what they need. It's not about knowing what the iPhone 20 will be like; it's about trusting that when it comes out, they'll like it, because they believe in the direction Apple is heading.

The same principle applies to choosing an MES provider. At Critical Manufacturing, our vision of **“Making Industry 4.0 a Reality”** ensures that we are constantly evolving, not just to meet today’s needs but to anticipate the challenges and opportunities of tomorrow. We focus on creating a platform that grows with you, adapting to technological advancements, shifting market conditions, and changes in your operational priorities.

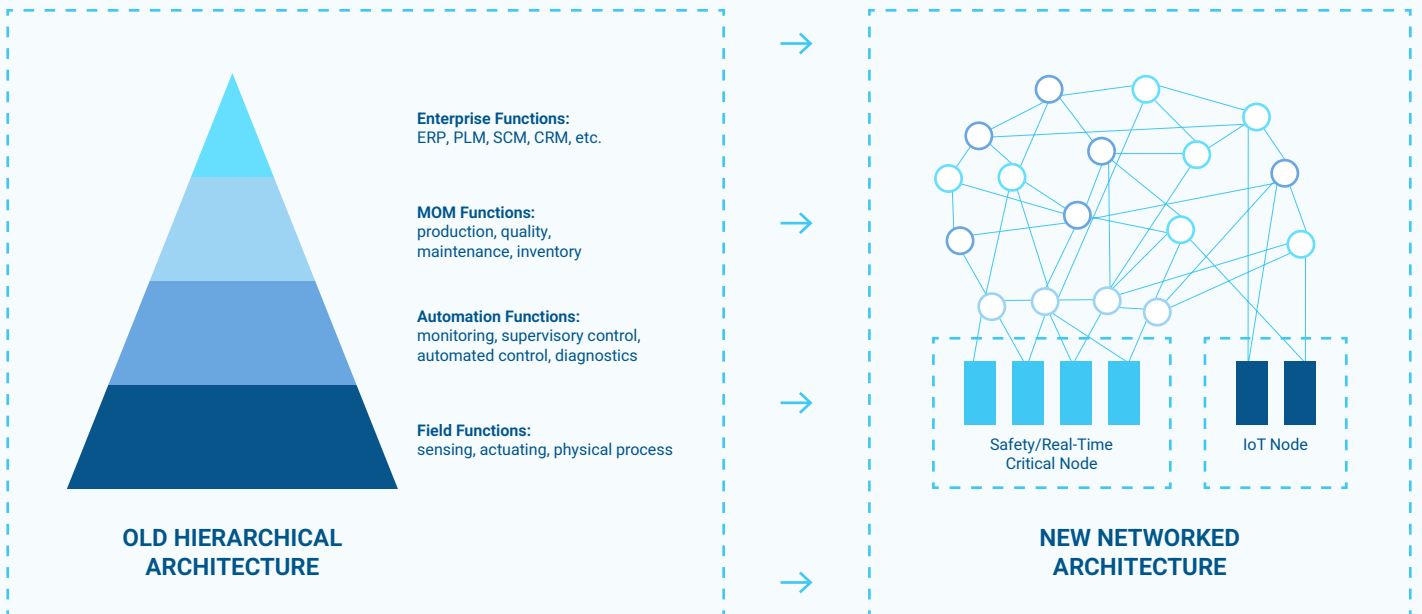
A Decade of Change

Consider how much can change in 10 years. Ten years ago, technologies like IoT, AI, and digital twins were in their infancy. Today, they’re critical drivers of manufacturing excellence. A decade from now, there will undoubtedly be new innovations that transform the industry again. That’s why selecting an MES provider is about more than checking boxes on today’s requirements—it’s about ensuring your partner has the vision and capability to adapt as the industry evolves.

At Critical Manufacturing, we’re not just focused on delivering the best MES product today. We’re committed to being the partner you can trust over the life of your project and beyond. Our frequent product updates, commitment to innovation, and deep understanding of manufacturing ensure that you’re not just investing in software—you’re investing in an ecosystem designed to keep you ahead of the curve a decade from now. The key is not just to invest in a product—it’s to invest in a company whose vision, adaptability, and innovation align with yours over the long term.

At Critical Manufacturing, we’re committed to being the partner you can trust over the life of your project and beyond.





source: <https://www.automation.com/en-us/articles/january-2022/beyond-pyramid-isa95-industry-4-0>

Failing to consider this trajectory can lead to misalignment between your needs and the provider’s roadmap, leaving you in an awkward position a few years down the line. That’s why understanding your partner’s vision and future direction is paramount. At Critical Manufacturing, our vision of **“Making Industry 4.0 a Reality”** ensures that we remain aligned with the long-term goals of our customers.

2. TRUE EXPERTISE: BEYOND PRODUCT DEVELOPMENT

Having great software developers capable of building best-in-class products is essential—but it’s only one part of the equation. Truly excelling as an MES provider requires a deep understanding of the industries where those products are applied. At Critical Manufacturing, we don’t just create software; we live and breathe manufacturing. This means immersing ourselves in the real-world challenges and opportunities faced by our customers.

We are active participants in shaping the future of the manufacturing industry, collaborating with leading organizations like ISA, MESA, CESMII, and the World Manufacturing

Foundation. Our involvement ensures we stay ahead of emerging trends and maintain a finger on the pulse of industry needs. For example, that’s why we follow ISA-95, the gold standard for integrating enterprise and control systems. This isn’t just a badge of honor; it’s a commitment to ensuring our solutions align with proven best practices. We believe in doing things the right way, not just our way.

For manufacturers, this means you can trust that we’re not reinventing the wheel but building on a solid foundation of consistency and reliability. ISA-95’s standardized terminology, workflows, and hierarchies take the guesswork out of scoping projects, aligning stakeholders, and building MES expertise within your organization. Instead of learning a vendor-specific system, your team gains skills grounded in industry-wide practices, making them more effective and future-ready.

By combining technical prowess with domain expertise, we offer more than a product—we provide the confidence that comes with knowing your partner truly understands your industry and its complexities.

Innovation is not just about introducing new features; it's about solving real problems and adapting to evolving conditions.

Here are just a few examples of how this expertise translates to actionable benefits in specific industries:

- **Semiconductor Manufacturing:** We recognize the critical need for precision, yield optimization, and seamless equipment integration. Our MES solutions are designed to meet these demands by providing tools to enhance wafer traceability, reduce downtime, and ensure the highest levels of quality.
- **Medical Device Manufacturing:** Compliance, traceability, and quality control are non-negotiable in this highly regulated sector. Our solutions enable seamless adherence to regulatory standards while optimizing manufacturing efficiency and maintaining product integrity.
- **Electronics Manufacturing:** In the fast-paced world of electronics, agility and speed are critical. Our MES supports dynamic production schedules, handles frequent design changes with ease, and ensures quality at scale. Advanced capabilities like real-time monitoring and predictive maintenance help manufacturers stay competitive in this high-pressure environment.
- **Industrial Equipment Manufacturing:** Producing complex, large-scale machinery demands robust control and visibility over every process. Our MES integrates advanced planning and scheduling tools, IoT-enabled machine monitoring, and data-driven decision-making to help manufacturers improve productivity, reduce waste, and deliver equipment on time and within specifications.

This combination of technical capability and industry knowledge sets us apart as more than a product vendor—we are a true partner who understands your world and can guide you through its challenges.

3. INNOVATION AS A LONG-TERM COMMITMENT

Innovation is not just about introducing new features; it's about solving real problems and adapting to evolving conditions. Transformations take time, and challenges will inevitably arise. You need a partner who can respond to your requests as well as anticipate your needs and proactively guide you forward.

At Critical Manufacturing, we innovate not just in product development but in problem-solving and adaptability. For example, as Industry 4.0 technologies like IoT and AI became more prominent, we didn't just integrate them into our platform—we built tools like our **IoT Connector** and **Data Platform** to help customers capitalize on these advancements.

This proactive approach ensures that our customers aren't just keeping up with change—they're leading it.

4. THE POWER OF A STRONG ECOSYSTEM

A successful MES implementation goes beyond the software itself—it requires a robust ecosystem of partners who can deploy solutions globally and ensure consistent quality. At Critical Manufacturing, we have built one of the most rigorous partner certification programs in the industry. This ensures that no matter where you are or which partner you choose, you receive the same high-quality implementation service. Our global network of trusted system integrators brings deep expertise in deploying MES solutions across diverse manufacturing environments, which ensures local support and seamless scalability. By investing in our ecosystem, customers gain access to a broad range of implementation capabilities, best practices, and industry insights, providing confidence that their MES deployment will align with operational goals and strategic objectives.

CONSIDERING A FULL INDUSTRIAL TRANSFORMATION?

For organizations undertaking large-scale Industry 4.0 initiatives, MES is one piece of a much larger puzzle. While its importance cannot be overstated, selecting the right MES provider is about more than just software—it's about finding a partner who can help you navigate the complexity of transformation itself.

1. GUIDING, NOT JUST RESPONDING

Transformations are inherently complex, and require alignment across people, processes, and technology. A true partner doesn't just respond to your immediate requests—they help guide your journey, ensuring you avoid pitfalls and maximize opportunities.

At Critical Manufacturing, we view ourselves as transformation enablers. Our vision of ["Making Industry 4.0 a Reality"](#) drives us to provide not just technology but the expertise, guidance, and tools our customers need to succeed. From helping manufacturers align their digital strategies to supporting implementation and scaling, we are committed to being a partner in transformation—not just a vendor.

2. ADAPTING TO NEW REALITIES

Industrial transformations often span several years, during which technologies, market conditions, and organizational priorities can shift. A partner who is agile and forward-thinking is

essential to navigating these changes successfully.

For example, as digital twins emerged as a critical technology for Industry 4.0, we integrated them into our platform, providing customers with real-time insights and predictive capabilities. Similarly, our [Marketplace for Apps](#) allows manufacturers to customize and expand their MES as their needs evolve, ensuring the platform remains relevant even as new challenges arise.

This ability to adapt and innovate over time is a hallmark of a true leader—and it's what sets us apart.

3. EXPERTISE IN MANUFACTURING TRANSFORMATION

Broad transformation initiatives require more than just technical know-how; they require a deep understanding of manufacturing excellence. At Critical Manufacturing, we bring decades of experience in helping manufacturers optimize their operations, align their strategies, and achieve measurable results.

Our leadership in MES, combined with our broader expertise in manufacturing processes and technologies, ensures that we can support every aspect of your transformation. Whether you're implementing IoT for the first time, integrating advanced analytics, or scaling smart factory initiatives, we have the knowledge and capabilities to help you succeed.

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WHY LEADERSHIP SHOULD GUIDE YOUR DECISION

Whether you're implementing MES or pursuing a broader Industry 4.0 transformation, the choice of partner is critical. Today's product capabilities matter, but what matters more is the company behind the product.

1. VISION AND TRAJECTORY

You're not just buying software—you're investing in a platform and a partner. Critical Manufacturing's vision of **"Making Industry 4.0 a Reality"** ensures that we are always innovating and evolving to meet the needs of tomorrow.

2. EXPERTISE IN YOUR WORLD

We don't just build products; we understand manufacturing. Our expertise in MOM best practices and deep industry knowledge make us uniquely qualified to help you achieve your goals.

3. INNOVATION THAT SOLVES PROBLEMS

True innovation is about more than new features—it's about solving real problems and adapting to change. As a leader, we provide not only the tools you need but the guidance and adaptability to ensure your long-term success.

By choosing Critical Manufacturing, you're choosing a partner who will deliver best-in-class solutions today and guide you through the complexities of transformation for years to come. Don't just select a product—select a partner who can make your vision a reality.



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manufacturing
an ASMPT company

JEFF WINTER

VP BUSINESS STRATEGY AT CRITICAL MANUFACTURING

Jeff Winter is the Vice President of Business Strategy for Critical Manufacturing, where he leads strategic growth initiatives and business development while positioning the company as a global leader in MES technology. With almost 20 years of experience working for different industrial automation product and solution providers, Jeff has a unique ability to simplify and communicate complex concepts to a wide range of audiences, educating and inspiring people from the shop floor up to the executive board room. Jeff is also highly active in the Industry 4.0 community. He serves on the Executive Board for the International Society of Automation (ISA), the International Board of Directors for Manufacturing Enterprise Solutions Association (MESA), is a U.S. registered expert for the International Electrotechnical Commission (IEC) as a member of TC 65, and as a Smart Manufacturing Advisor to CESMII.