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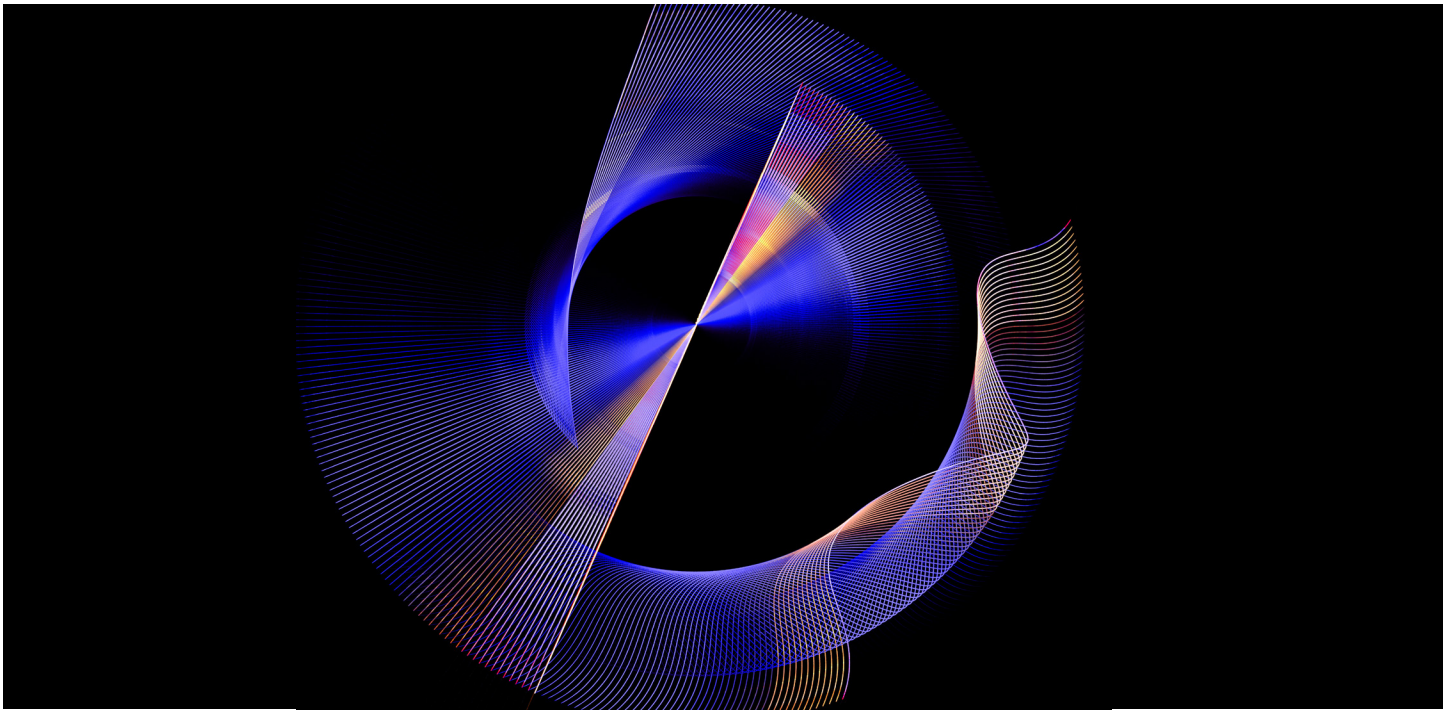


Laying the foundation for smart factory enhancements

The smart factory era has arrived, but not all manufacturers are ready for it. Spurred by the promise of outsized returns, manufacturers are looking to acquire and integrate smart factory capabilities across their plant networks. The benefits can be significant. Early smart factory adopters report average three-year gains of 10% for factory output, capacity use, and labor productivity, according to a Deloitte study.

With so much potential, many enterprises are experimenting with smart factory technology and use cases. Yet, far fewer manufacturers are approaching this transformative suite of enhancements in a way that consistently scales across all plants. What's missing in many cases is a global manufacturing process and data model that a modernized, enterprisewide Manufacturing Execution System (MES) can provide. Without it, business leaders may be missing out on unrealized value and capabilities.

MES processes and data models that are designed to drive standardization across plants address common pain points such as labor and machine productivity, limited visibility into inefficiencies across the value chain, and material and labor traceability. (Read more about the value of MES in the first installment of this series.)

But MES is also essential as the foundation for taking the next step in smart factory adoption. With a single MES solution design that is tailored to each plant, manufacturers can implement an enterprise structure across the plant networks that permits connected and consistent data; repeatable, standardized processes; and harmonized software solutions. These global processes and data standards are essential for delivering smart factory capabilities at scale. Far from random acts of digital popping up in isolated plants, the manufacturer is positioned to take a whole-of-enterprise view and drive the entire organization toward seizing the benefits of smart factory enhancements.

To better understand this opportunity, consider the pitfalls of smart factory exploration in the absence of a foundational organizationwide MES.

Escaping pilot purgatory

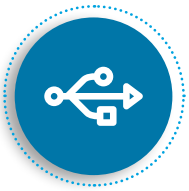
When new technology permits new value, there can be a desire to jump straight to implementing the transformative solution without considering how the technology fits into the broader operational system. For example, many manufacturers want to realize a smart factory control tower fed by dynamic, real-time asset intelligence permitting predictive analytics. But while implementing those kinds of solutions at the plant level may be within reach, scale will remain elusive. Indeed, the enabling technology exists, but without consistent MES, the manufacturer is forever beginning at ground zero when seeking to enable smart factory capabilities across its network.

The problem is that when smart factory capabilities are built on a local level, the manufacturer is only building pockets of capabilities. A global manufacturer requires consistent capabilities across its plant network, and working with a variety of MES solutions inherently prevents standardization that underpins smart factory capabilities at the enterprise level. What is more, rushing to acquire the most compelling and transformative capabilities takes a largely solution-oriented perspective, where what is needed is also a people-oriented perspective.

One of the valuable qualities of deploying a global MES template is that it facilitates knowledge transfer, where lessons learned at one plant can be shared across the enterprise. In this, a manufacturer is not continually learning the same lessons as they emerge from varying software solutions. Extend this value into the realm of smart factory adoption. When it comes to transformation, the human talent and knowledge needed to implement and apply new capabilities may not be found in the same plant or working on the same systems. If the best engineers are in one location, the most capable IT professionals at another, and the business leaders still elsewhere, the organization is missing out on coordinated human resources, empowered with consistent MES, that can forge the most expedient and valuable path to smart factory adoption.

It is time to get out of "pilot purgatory," where experiments die on the vine or whose value is trapped within the four walls of a local plant, rather than globally applicable. When an innovative tool and use case is identified and fine-tuned, the business needs a way to weave that solution into a common way of working, especially across dispersed facility networks. If this is attempted without working to make processes, software, and data standard between plants, it will cause challenges for how solutions can scale.

The answer is to make a foundational investment in defining a global MES process and data model that can be tailored to the local requirements that create differentiation. This global platform can dramatically reduce the incremental effort required to deploy smart factory solutions from pilot phases to each additional facility. By reshaping the economics of potential global business value compared to the cost to deploy, manufacturers can shift their focus from the challenge of scaling individual use cases to building an advantaged smart factory ecosystem.



Compounding smart factory value with MES

The case for enterprisewide MES is clear. With a central executional system, MES provides the core transactional processes and data model for business efficiency, process visibility, and consistency. The benefits it lends to smart factory adoption only make the case stronger. Modernized MES allows enterprises to easily experiment with smart factory use cases with common processes and data, which increases scalability and allows the business to extract more value from the use cases themselves.

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Consider the example of a major manufacturer of electronic systems, producing more than 100,000 kinds of products. The business and plant network complexity was ripe for smart factory investment, but as a companion to that effort, the manufacturer also needed to standardize its MES. Following Deloitte's DMES approach, which is a process-led MES implementation that speeds design and deployment, the manufacturer compounded the value of its smart factory applications. It implemented a particularly successful use of video on the shop floor, and what resulted was more than just the smart factory application. Via MES, the manufacturer brings together video, the work order, the employee information, and other data streams to open a much richer data set that can reveal production insights.

Many manufacturers are becoming increasingly aware of the importance of foundational MES and are making targeted investments. There is some urgency for manufacturers, as MES and the smart factory capabilities it enables will be vital competitive advantages as the Fourth Industrial Revolution unfolds. The evident need is to find the most effective and expedient path to speeding MES design and deployment.

The race is on in the new industrial revolution

Today, most companies (55%) are in an exploratory phase in terms of smart factory capabilities, according to a Deloitte survey. There is a narrowing window for a first-mover's advantage. The time is now to set the velocity for transformation and capture a competitive edge in this new arena. If MES remains fragmented and bespoke between plants, manufacturers may find themselves always playing catch-up, fighting for margin and efficiency without the necessary tools to win.

Companies exploring smart factory applications at a plant level are missing out on an opportunity to leverage centralized capabilities, including human capital, business strategy, and business analytics. When MES implementation and smart factory adoption is a center-led capability area, the business can realize greater and faster return on investment, as well as the capacity to scale solutions that drive a bottom-line impact.

Take the case of a global aerostructures manufacturer, which sought to enhance visibility, optimize throughput, and improve delivery. Working with Deloitte, the manufacturer built and piloted an IoT and cloud analytics-enabled dynamic scheduler to track materials, monitor machines, and dispatch job assignments, ultimately with the objective of increasing utilization of critical machining center constraints. The MES solution provided the foundational processes and data for the dynamic scheduling algorithms, driving down the marginal effort to tailor the pilot to subsequent production lines. Once the use case was proven on one manufacturing line, it was rapidly scaled across the business, connecting operational asset utilization levers to financial benefits.

This is how manufacturers evolve in the new industrial revolution, and those positioned for growth are those that make network investments in MES. The obvious question becomes how to rapidly adopt MES to more quickly turn smart factory experiments into enterprisewide solutions. One approach is working with an adviser steeped in operational, financial, and strategic environments across industries. Deloitte, for its part, can help speed the path to value realization with a preconfigured solution that is rapidly deployed and tailored to each plant's operational realities. Our cutting-edge Smart Factory facility in Wichita, KS, gives us unique insight into how the pieces of the smart factory puzzle fit together and how they can transform enterprises to seize efficiencies and capabilities. Innovation, enhanced enterprise data, and new capabilities at scale are all available to the manufacturers that build a solid MES foundation and then consider the art of the possible.

Let's talk!

By choosing Deloitte's DMES solution, you can jump-start intelligent and timely transformation toward smart factory capabilities that align with your organization's broader goals. It all starts with a process-led, turnkey approach that leverages many years of digital transformation, manufacturing operations, and systems implementation experience. Contact us to learn more about DMES or to discuss a specific challenge your organization is facing in its digital transformation journey.

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