



ACCELERATING TIME TO VALUE USING PRECONFIGURED DMES

Product development shouldn't take years. And product improvements should be fast, friction-free, and informed by data. The Deloitte-Siemens alliance is an Industry 4.0-focused strategic team of business, technology, marketing, and sales professionals who strive to digitally transform the way organizations design and produce products, monitor their performance, and anticipate their aftermarket maintenance. We help clients reimagine the product life cycle so that everyone in the organization has insight into the process and the benefits of the physical-to-digital-to-physical technology convergence can be fully taken advantage of. One way we do that is through our preconfigured solutions, which are designed to help clients quickly realize time-to-benefit, measurable digital transformation benefits, and accelerated return on investment—like DMES, a preconfigured solution for manufacturing execution systems.

THE CHALLENGE

Organizations that lack an alignment of people, processes, and technology across their value chain often experience common pain points. A good chunk of these are consistent across industries, and, although they are coming out of the manufacturing space, the root causes are typically related to a lack of integration and collaboration between upstream and downstream functions. For example, most companies see significant manufacturing issues crop up when launching new products due to things like production scheduling or getting the right raw materials and/or work instructions to the production floor. This is because different departments, such as material engineering and manufacturing, are working in their own silos rather than sharing their data for production design and the corresponding work instructions on the production floor. For this reason, we look at our clients' challenges holistically through the lens of

the end-to-end "digital thread" that connects product development and manufacturing in order to optimize the enabling capabilities throughout the entire life cycle. The digital thread begins by capturing the voice of the customer and conceptualizing the product through virtual design and model-based engineering. A simulation of the production processes is created before continuing to digital production planning and scheduling. Then, we provide our services in supervising manufacturing and production execution. Finally, Deloitte continuously monitors the product in the field.

Because of this approach, we are successful in not only tackling the manufacturing issues of our clients, but also helping them transform digitally across their product's life cycle so they can gain competitive advantage in the marketplace.

Our preconfigured solutions

To accelerate digital transformation for our clients, we aligned four core capabilities across the digital thread in four major areas: digital engineering, industrial simulations, manufacturing execution, and real time monitoring.

DIGITAL ENGINEERING

To manage the design, development, and testing of the product, as well as to create process documentation and requirements, we have developed the a preconfigured PLM solution—DPLM—using Siemens's Teamcenter, Polaris, and Annex solutions.

INDUSTRIAL SIMULATION

To dynamically represent and validate processes, and to plan and optimize against hypothetical production parameters, Deloitte built the preconfigured DSim solution leveraging Siemens's Tecnomatix solution.

MANUFACTURING EXECUTION

Manufacturing execution provides the backbone for manufacturing productions. To build, execute, and track tactical work plans, integrate with production systems, manage quality, and report metrics, we have created a preconfigured MES solution—DMES—that uses Siemens's Opcenter.

REAL-TIME MONITORING

In order to collect, synthesize, and display live data and performance insights—and to predict upcoming issues or events—Deloitte uses our preconfigured DIoT platform, which is built using Siemens's MindSphere solution.

Deloitte has deep experience across each of these areas, and working closely with Siemens has allowed us to leverage this expertise, as well as Siemens's best-in-class software.

What capabilities come with Deloitte's preconfigured DMES solution?

HOW DOES A PRECONFIGURED SOLUTION ADD VALUE?

Our experience shows that pre-built processes and tools pave the way for a faster and more efficient path to value realization. With over 15 years of cross-industry involvement in technology-driven enterprise transformation, Deloitte was able to build predefined operational process models embedded with industry-best practices, called IndustryPrint. Using this with our clients accelerates the standardization of around 70-80 percent of processes across their plant network and allows us to focus on the other 20-30 percent of our clients' unique strategic goals.

Preconfiguring our IndustryPrint in Siemens's Opcenter, using out-of-the-box functionalities, has brought immediate benefits to our clients—the opportunity to adapt to industry standard processes and accelerate the MES implementation timeline by

DMES is Deloitte's comprehensive preconfigured Manufacturing Execution Solution that provides an extensive set of MES capabilities, combined with Deloitte's predefined business processes, data flows, integrations, and configurations. There are six core capabilities, for which we have defined out-of-the-box reports, dashboards, and integration templates to other enterprise solutions, such as ERP and PLM.

MANUFACTURING PROCESS DEFINITION

The DMES solution allows clients to ingest, understand, and manage incoming data and define the manufacturing process. It comes with processes and configurations to manage products, product families, bonds, production processes, automation, labeling data, production resources, and anything related to production execution on the floor.

PRODUCTION SCHEDULING

Our clients will be able to import, schedule, and dispatch orders to production cells or lines to maximize OEE. We preconfigured the Opcenter APS model for this subcapability.

PRODUCTION EXECUTION

This capability provides guided execution of production orders according to the Master Production Record, staging management, and in-process label printing.

TRACKING AND TRACEABILITY

The solution comes with processes and data modeled to capture details for each production order to track the full genealogy of each production batch.

PRODUCTION QUALITY MANAGEMENT

DMES enables integration with production systems for in-line inspection and near/off-line testing.

CLOSING PRODUCTION MANAGEMENT

With the DMES solution, our customers can print and maintain a history of labels for parts, raw materials, and assembly kits.

THE DMES DEPLOYMENT APPROACH

The DMES deployment focuses on source value and patterns of commonality, enabling rapid solution scaling, localized tailoring, and a clear link to ROI. It can also be personalized based on a client's desired business outcome. Deployment is broken down into three major steps.

In the **Assessment and Roadmap** step, we bring a specific set of tools and templates to quantify value and drive decision making, as well as help our clients define their roadmap within weeks.

A focused assessment phase creates a vision for an accelerated global design and deployment, reducing its cost and overall time to value. First, we bring in Deloitte's perspective on the latest manufacturing and smart factory trends across industries and help our clients define their future state manufacturing vision. Using this vision as a guideline, we assess the current state and future state across all MES capabilities. This leverages Deloitte's capability maturity models, or CMMs, which work by scheduling individual meetings for each process/core capability area to provide insight on the client's maturity level. Then, together, we gauge the necessary current state and future state maturities.

Based on the individual capability future state requirements, we develop a summary level CMM for each planned group and recommend an optimal solution. The required maturity level for any of the core capabilities can be low, basic, or advanced. Based on this, we recommend a few options: MES LITE (a viable option for low complexity production lines), MES (the optimal solution when guided manufacturing, auto production tracking, and tracing are required), digital manufacturing/smart factory capabilities with DMES solution (our best-in-class option that integrates MES capabilities, advanced quality management, IoT, AR/VR, predictive maintenance, and control tower), or custom solutions (bespoke solutions for highly complex scenarios).

Following the recommendation of the

optimal solution, we define a list of improvement opportunities formed on the identified gaps in the CMM and the recommended solution levels, as well as perform a detailed readiness assessment to completely understand the approach required to change the hearts and minds of the people who will be using the future state processes and the corresponding MES solution. We use these to create an implementation plan and the associated business case.

The **Implementation** step encompasses both creation of a global design template and the tailoring of that template to individual locations. We fully leverage the DMES solution during this step to accelerate both segments.

Industry-leading processes shape the global template. We start with DMES process models to get alignment on the business process and identify the changes necessary to meet the client's unique requirements. We then develop a fit/gap analysis against the preconfigured solution to be reviewed by the client's CCB (Change Control Board) for implementation. We then utilize DMES data flow templates to standardize data integration between enterprise solutions such as PLM and ERP. During the local solution deployment segment, we make slight adjustments to the global template, leveraging templates to speed up the process. These templates are tailored to specific local execution needs and plant-specific requirements, such as line level configuration and interface development.

During the final step, **DMES Application Management**, we manage the production environment of the solution and build additional predictive analytic capabilities.

This phase focuses on change management and value capture and is the critical point for ensuring long term program success. During this step, we provide a number of options to help manage the MES solution after going live in the production environment. We can also assist in training execution, an issue resolution plan or issue resolution planning, continuous improvement ideation, continuous improvement execution, and advanced predictive analytics for process execution.



HOW HAS DELOITTE INTEGRATED THE DMES SOLUTION WITH OTHER PRECONFIGURED SOLUTIONS?

DMES is the nexus for all manufacturing data, giving it a central role in the Smart Factory and Digital Twin vision. Deloitte has worked to heavily merge DMES with DPLM, DSim, and DIoT to create an integrated end-to-end digital thread for our clients.

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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