IDC MarketScape

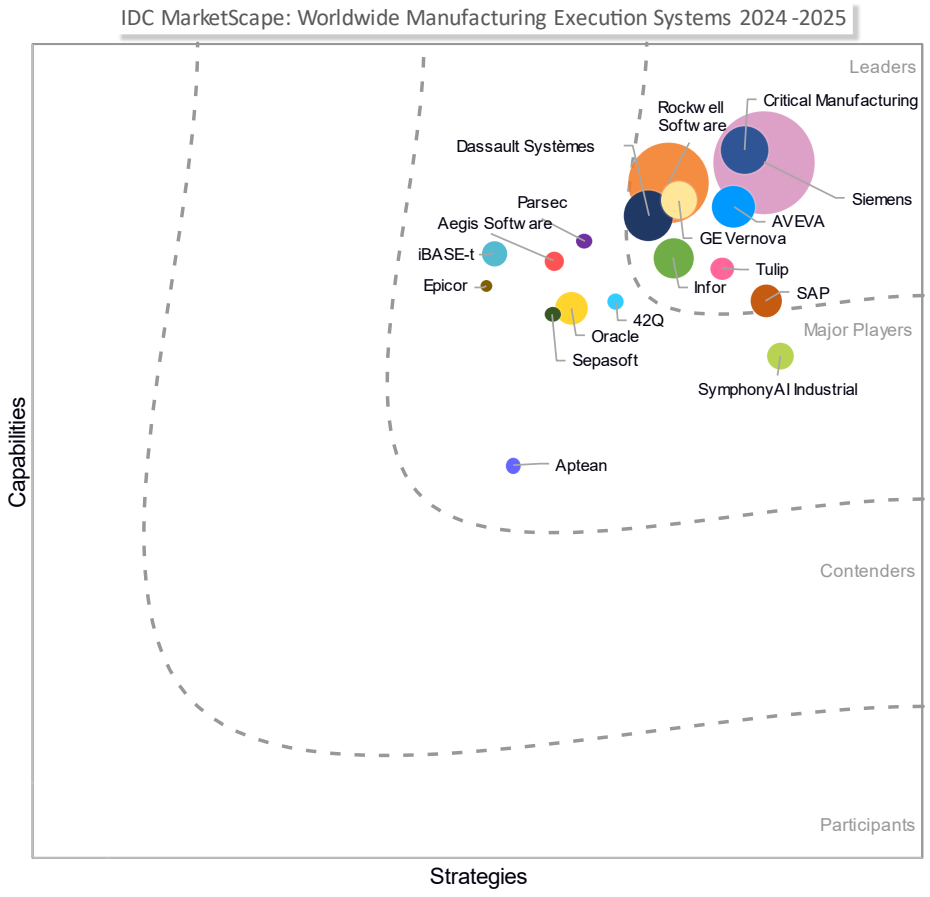
IDC MarketScape: Worldwide Manufacturing Execution Systems 2024–2025 Vendor Assessment

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THIS EXCERPT FEATURES CRITICAL MANUFACTURING AS A LEADER IDC MARKETSCAPE FIGURE

FIGURE 1

IDC MarketScape: Worldwide Manufacturing Execution Systems 2024–2025



Source: IDC, 2024

Please see the Appendix for detailed methodology, market definition, and scoring criteria.

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ABOUT THIS EXCERPT

The content for this excerpt was taken directly from IDC MarketScape: Worldwide Manufacturing Execution Systems 2024–2025 Vendor Assessment (Doc # US51813624).

IDC OPINION

The need for shop floor processes to coordinate with rapidly evolving value chains requires that manufacturing execution systems (MES) work seamlessly with other enterprise and manufacturing-focused applications to ensure visibility from the shop floor to the top floor. The rise of the 3rd Platform, along with innovation drivers such as cloud computing, edge analytics, the Industrial Internet of Things (IIoT), and artificial intelligence (AI), is significantly influencing the development of MES. Recently, there has been a notable increase in the adoption of cloud solutions to enhance or overcome the limitations of traditional on-premises MES, providing organizations with improved flexibility and scalability. Additionally, there is a growing emphasis on extensibility and user experience, with low code/no code and plug-and-play features becoming integral to vendor offerings. As companies increasingly prioritize sustainability, MES implementations are also being utilized to facilitate energy management and broader sustainability initiatives.

The MES landscape is rapidly transforming, and while it is crucial to invest in solutions that meet immediate business needs, it is equally important to select systems that can adapt to evolving requirements. As innovative concepts continue to surface, choosing a vendor committed to long-term innovation while fulfilling business demands is vital. With a wide array of solutions available, it is essential to select an MES that caters to the specific characteristics of production processes and industries, can be deployed swiftly for immediate benefits, and is designed to remain relevant in the future.

IDC MARKETSCAPE VENDOR INCLUSION CRITERIA

This vendor assessment includes software providers in the MES market serving the manufacturing industry.

For this IDC MarketScape, vendors should be active in at least two of the global regions of the Americas, Asia/Pacific, and Europe, the Middle East, and Africa (EMEA). Their MES applications should have a broad coverage of the entire range of plant floor–specific processes. Vendors active in this market should have a strategy in place to adopt a range of modern IT technologies — such as cloud and edge — and game-changing plant floor technologies such as the Internet of Things (IoT), and AI as it applies to manufacturing execution systems.

ADVICE FOR TECHNOLOGY BUYERS

MES applications hold significant potential for generating valuable production data, enhancing workflow visibility, and contributing to informed decision-making.

- To fully harness this potential, organizations need to evaluate and optimize their internal production processes while selecting a vendor that aligns with their specific requirements. Although an MES is designed to tackle various aspects of performance, quality, and availability, companies must first pinpoint the key principles they wish to prioritize in order to identify the most suitable solution. Therefore, a comprehensive internal understanding of the process needs is essential.
- This understanding is crucial for gaining support within the organization and ensuring buy-in from all relevant stakeholders. Commitment from top management is vital to drive this initiative, but organizations should also recognize the importance of implementing training programs and knowledge-sharing platforms to assist technicians in effectively utilizing the solution on the shop floor.
- It is crucial for organizations to prepare their infrastructure adequately for the type of MES investment they need. It is important to invest in integrating their assets and production equipment, enabling data collection from all points in the factory to gain a holistic picture of the entire shop floor.

VENDOR SUMMARY PROFILES

This section briefly explains IDC's key observations resulting in a vendor's position in the IDC MarketScape. While every vendor is evaluated against each of the criteria outlined in the Appendix, the description here provides a summary of each vendor's strengths and opportunities.

Critical Manufacturing

Critical Manufacturing is positioned in the Leaders category in this 2024–2025 IDC MarketScape for worldwide manufacturing execution systems.

Established over 15 years ago with an initial focus on the semiconductor sector, the company has since expanded its offerings to cater to the electronics, medical devices, and industrial equipment industries. Critical Manufacturing has consistently delivered rapid product updates, enhancing its fully containerized solution with a growing array of functional modules, applications, and configuration options. This evolution emphasizes advanced interactions such as augmented reality, bots, and voice recognition, alongside low-code capabilities, a robust data platform, and automation features, positioning it as one of the most sophisticated solutions in the market, with notable growth in both market presence and customer base.

Currently, Critical Manufacturing's MOM suite encompasses the core MES along with various modules focused on quality/statistical process control (SPC), innovation management, cost analysis, visibility, data management, a digital twin of the factory, alarm management, augmented reality, and advanced planning and scheduling. To facilitate machine connectivity, the company offers an integration and automation suite tailored to the specific needs of its primary target industries. Additionally, Critical Manufacturing features a digital twin module, fabLIVE, which delivers a real-time 3D representation of the plant, enriched with contextual information through labels, colors, and charts. The company has also integrated a digital twin solution from the third-party software provider Twinzo. Its extensive partner ecosystem includes notable firms such as Accenture, Cognizant, and HCL.

The company's primary clientele consists of large enterprises with revenues exceeding $1 billion, operating multiple facilities across the semiconductor, electronics, medical devices, and industrial equipment sectors. While the main MES is typically offered on a perpetual license basis, all channel sales are conducted through a subscription model.

Strengths

Critical Manufacturing possesses several unique attributes that set it apart. Firstly, it offers functional flexibility. The company has developed specific features tailored to various high-tech and discrete manufacturing sectors while ensuring a consistent user experience. The foundational product remains uniform across different verticals, enhanced by vertical templates that can be implemented to suit diverse factory environments. The solution is built on a scalable, multi-plant architecture, utilizing containers on distributed systems, complemented by an analytics layer that aggregates data from multiple facilities.

To support center of excellence (COE) operations, a dedicated deployment manager is available to oversee the installation and updates of the product, as well as customizations and configurations throughout the plant network. Customers benefit from an intuitive user interface and a range of configurable options that facilitate process mapping and the identification of operational inefficiencies that can be optimized further. A specialized low-code section within the product consolidates all low-code functionalities, enabling users to create UIs through drag-and-drop methods, invoke APIs, or construct queries also via low code, along with business rules workflows, state models, protocols, automation workflows, and custom application development.

Additionally, Critical Manufacturing offers a scalable IoT data platform designed to complement and extend the MES platform. This platform automatically captures all MES transactional data and integrates information from equipment and other sources, storing, transforming, and enriching data points with MES insights. This capability allows for extraction, visualization, and advanced machine learning training and deployment for both supervised and unsupervised algorithms. The

entire suite features a low-code solution that simplifies the creation and deployment of custom UIs and data workflows through an easy drag-and-drop interface.

Challenges

Historically, implementation of the solution has been relatively costly, with limited options for pricing configurations. Although Critical Manufacturing has made strides in this area, it may not fully cater to a customer base that includes both small and medium-sized enterprises as well as large corporations. Furthermore, the solution does not feature an integrated energy management module, which may necessitate the use of additional software applications for monitoring energy consumption on the factory floor, potentially resulting in extra expenses.

Consider Critical Manufacturing When

Organizations operating in the high-tech and embedded electronics space should consider Critical Manufacturing if they are looking for a partner that offers a specialized solution tailored to meet industry-specific needs at the highest standards.

APPENDIX

Reading an IDC MarketScape Graph

For the purposes of this analysis, IDC divided potential key measures for success into two primary categories: capabilities and strategies.

Positioning on the y-axis reflects the vendor's current capabilities and menu of services and how well aligned the vendor is to customer needs. The capabilities category focuses on the capabilities of the company and product today, here and now. Under this category, IDC analysts will look at how well a vendor is building/delivering capabilities that enable it to execute its chosen strategy in the market.

Positioning on the x-axis or strategies axis indicates how well the vendor's future strategy aligns with what customers will require in three to five years. The strategies category focuses on high-level decisions and underlying assumptions about offerings, customer segments, and business and go-to-market plans for the next three to five years.

The size of the individual vendor markers in the IDC MarketScape represent the market share of each individual vendor within the specific market segment being assessed.

IDC MarketScape Methodology

IDC MarketScape criteria selection, weightings, and vendor scores represent well-researched IDC judgment about the market and specific vendors. IDC analysts tailor the range of standard characteristics by which vendors are measured through structured discussions, surveys, and interviews with market leaders, participants and end users. Market weightings are based on user interviews, buyer surveys and the input of IDC experts in each market. IDC analysts base individual vendor scores, and ultimately vendor positions on the IDC MarketScape, on detailed surveys and interviews with the vendors, publicly available information and end-user experiences in an effort to provide an accurate and consistent assessment of each vendor's characteristics, behavior and capability.

Market Definition

Manufacturing execution system is the software platform that covers all operational processes across a network of factories. Making a reference to the MESA Model (mesa.org/en/modelstrategicinitiatives/MESAModel.asp), the MES platform comprises the following MESA functions: product tracking and genealogy, resource allocation and status, performance analysis, process management, data collection acquisition, dispatching production units, quality management, labor management, warehouse management (logistics focus: transportation management system [TMS], warehouse management system [WMS]), maintenance management (asset reliability focus: enterprise asset management [EAM], computerized maintenance management system [CMMS], and operations and detailed scheduling. The MES platform is a common platform for multiple plants worldwide, and as such enables the standardization of operational processes and KPIs across the network of factories. The MES platform also includes enterprise manufacturing intelligence (EMI) functionalities to measure and analyze the performance of the network of factories. The MES platform must include standard integration procedures with plant floor controls (ISA-95 level 2 and below) and critical IT business applications, particularly ERP and PLM.

LEARN MORE

Related Research

- *IDC MarketScape: Worldwide High-Tech and Electronics Manufacturing Execution Systems 2023 Vendor Assessment* (IDC #US49435722, April 2023)
- *IDC MarketScape: Worldwide Engineering-Intensive Manufacturing Execution Systems 2023 Vendor Assessment* (IDC #US49435622, April 2023)
- *IDC MarketScape: Worldwide Discrete Manufacturing Execution Systems 2023 Vendor Assessment* (IDC #US49435422, April 2023)
- *IDC MarketScape: Worldwide Process Manufacturing Execution Systems 2023 Vendor Assessment* (IDC #EUR150526323, April 2023)

Synopsis

This vendor assessment includes software providers in the MES market serving the manufacturing industry.

The MES landscape is rapidly transforming, and while it is crucial to invest in solutions that meet immediate business needs, it is equally important to select systems that can adapt to evolving requirements. Choosing the right vendor can be a minefield, but the focus should be on selecting one that has a long-term commitment to driving innovation and addressing evolving business needs.

"As innovative concepts continue to surface, choosing a vendor committed to long-term innovation while fulfilling business demands is vital. With a wide array of solutions available, it is essential to select an MES that caters to the specific characteristics of production processes and industries, can be deployed swiftly for immediate benefits, and is designed to remain relevant in the future." — Lorenzo Veronesi, Associate Research Director, Manufacturing Insights, IDC

ABOUT IDC

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