

IDC MarketScape

IDC MarketScape: Worldwide Industrial IoT Platforms in Manufacturing 2019 Vendor Assessment

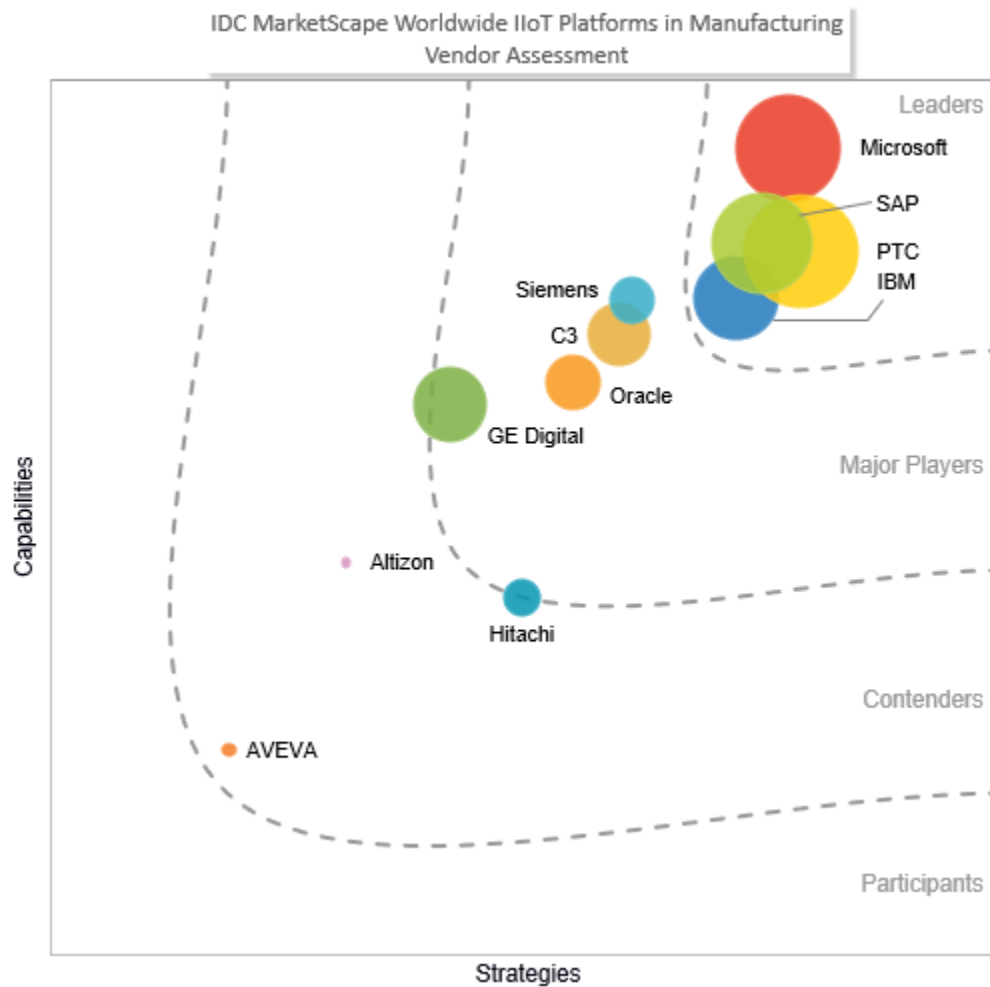
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THIS IDC MARKETSCAPE EXCERPT FEATURES PTC

IDC MARKETSCAPE FIGURE

IDC MarketScape Worldwide Industrial IoT Platforms in Manufacturing Vendor Assessment



Source: IDC, 2019

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

IN THIS EXCERPT

The content for this excerpt was taken directly from IDC MarketScape: Worldwide Industrial IoT Platforms in Manufacturing 2019 Vendor Assessment (Doc #US45116819e). All or parts of the following sections are included in this excerpt: IDC Opinion, IDC MarketScape Vendor Inclusion Criteria, Essential Guidance, Vendor Summary Profile, Appendix and Learn More. Also included is Figure 1.

IDC OPINION

Today, survival of the fittest is not linked to size or strength but to the ability to change – to move quickly, adapt, seize opportunities, and be agile. Capturing a piece of the digital transformation (DX) opportunity is at the center of business strategies today. Across all industries, this amounts to an opportunity for an increased annual economic value of \$18.5 trillion, or nearly 25% of global GDP. For the manufacturing industry, the opportunity is higher than most, representing \$4.5 trillion of the \$18.5 trillion opportunity. DX is driving manufacturers to rethink their technology strategy and that includes the incorporation of innovation accelerators such as the Internet of Things (IoT).

Manufacturers recognize that IoT will be among the technologies that will have the greatest impact on their businesses in the next five years, with roughly half of the industry in the United States already using IoT in some form in production. IoT provides manufacturers access to more data than ever before, which can fuel a company's transformation efforts. IoT is pervasive throughout the manufacturing value chain, with ongoing activity across the four primary strategic priorities:

- **Supply chain optimization** – Using IoT and sensors to improve supply chain orchestration
- **Smart manufacturing** – Using IoT and sensors to improve factory performance in the plant
- **Product innovation** – Using IoT and sensors to improve new product introduction (NPI)
- **Field service** – Using IoT and sensors to enhance service offerings and delivery

The biggest opportunity for transformation comes from a product/service standpoint. Manufacturers (discrete manufacturers in particular) are looking to IoT-connected products as a way of transforming business models that capitalize on the intersection of products and services. This link between customer products and real-time IoT data is an opportunity for manufacturers to better understand customers, as well as their behaviors and what they value, in order to deliver customized offers.

IDC MARKETSCAPE VENDOR INCLUSION CRITERIA

The vendor inclusion list for this IDC MarketScape is intended to include the most prominent industrial IoT (IIoT) platform providers focused on the manufacturing industry.

To qualify for this study, an organization had to provide:

- A commercially available – and generally available – software platform that can be used to build and deploy IoT applications and manage IoT devices
- Native support for industrial protocols within the platform offering, OPC at a minimum
- Edge application frameworks and runtimes
- Analytics tools including dashboards and advanced analytics (machine learning/artificial intelligence [ML/AI])

- Security capabilities within the platform architecture
- Tools to create a "thing model" (this model abstracts raw sensor data into a hierarchical semantic model and presents it as a "thing" to an application)
- API access to IoT data

In addition, participating vendors had to:

- Have cleared at least \$10 million in IoT platform revenue for 2018
- Be able to support global IoT deployments (Americas, EMEA, and APAC)
- Have at least 20% of their current IoT revenue stemming from the manufacturing vertical
- Be able to provide a minimum of two customer references for the manufacturing vertical (Reference customers must have had at least six months experience with the platform by January 2019 on a generally available offering.)

ADVICE FOR TECHNOLOGY BUYERS

This IDC MarketScape assessed the capabilities of vendors in three areas: the offering and offering portfolio, the go to market, and the business itself. We suggest technology buyers pay particular attention to these areas, which are discussed in the sections that follow

Offering and Offering Portfolio

- **Platform functionality:** In this study, we evaluated the core IoT platform functionality from many aspects, including how applications can access data, device management, data management, analytics, security, app development, deployment options, DevOps support, and the user interface (UI). However, IoT platforms have varying requirements in terms of the depth of technical skill needed to work with them so organizations should also internally assess their skill sets when choosing an IoT platform. For analytics-oriented IoT platforms, data science skills may also need to be assessed.
- **Integration:** We suggest technology buyers thoroughly vet possible suppliers for their integration capabilities with both the systems that generate the IoT data and the back-end systems they want to integrate this data with:
 - **Front-end integration:** Although some customization may be unavoidable due to equipment that speaks proprietary protocol formats, vendors that are serious about this space are investing in capabilities to more directly communicate with various types of industrial equipment.
 - **Back-end integration:** While there are some IoT use cases that can be driven off IoT data alone, we believe much of the value of IoT will be realized by the integration of that data with other key systems driving business processes. In the manufacturing space, we recommend evaluating integration with systems such as ERP, CRM, supply chain, asset management, manufacturing execution systems, and product life-cycle management (PLM).
- **Deployment options:** Over the past several years, it's become increasingly apparent that, for most organizations, workloads will live in a hybrid cloud, multicloud world. IoT applications are no different, and in fact, they can drive up the complexity by needing to run in offline edge scenarios. It is important to understand how well the vendor you are engaging with can support your unique application deployment needs.

In addition to the proper infrastructure to run distributed applications, we would recommend asking if you can use the same programming model for applications that run on different endpoints and if those applications can be managed in a similar way to your other workloads.

- **Solution/application portfolio:** While IoT can be utilized across the previously mentioned four main manufacturing strategic priorities, platform providers usually have certain use cases they are stronger in than others. IDC recommends that you examine a provider's current portfolio and future road map to ensure it aligns with your overall transformation goals. Select the vendor that can help you achieve results today but also set you up for future success.

Go to Market

- **Ecosystem development:** The Internet of Things is highly ecosystem driven. IoT platforms serve as foundational software for IoT deployments, but they are but one part of a full IoT solution. Therefore, it is important to understand how well the vendor you are working with has built up its partner ecosystem – specifically in the manufacturing vertical. Many IoT platform providers rely on partners to provide last mile industry functionality to their portfolio. These partners could include industrial control system companies, IoT device/gateway/silicon OEMs, systems integrators (SIs), mobile operators, security vendors, and analytics and application vendors. One customer we spoke with cited its chosen vendor's ecosystem as one of the main reasons it liked working with that company. The customer said whenever the company has a need, it finds this vendor has either already done integrations with a partner's product or can suggest a trusted partner to work with.
- **Customer success:** Many IoT projects fail to move past the proof-of-concept (POC) stage. There is no single reason why this happens, but one of the most prominent causes is that the organization failed to consider how the IoT project fed into the larger digital transformation goals of the company. We recommend evaluating IoT platform providers that not only have good technology but also take the time to understand – or help you work through – the key goals and KPIs for the project. This consultative approach is important for not only exploring the initial alignment between the vendor offering and your requirements but also ensuring that the vendor's longer-term road map is well synchronized with your strategy.
- **Pricing:** This study revealed that IoT platforms are priced in a variety of manners. These include being based on the amount of data exchanged with platform, computing resources (CPUs/number of cores on which software runs), the number of devices/sensors/assets/users, or within bundles that operate on a subscription-based model with a set monthly price for a fixed bundle of entitlements. The best pricing model can vary for different types of situations. We recommend carefully assessing if a pricing model used for a POC will scale, taking into consideration your specific IoT use case and any business models you plan to put in place based on IoT data.

Business

- **Investment in IoT:** IoT is a complex phenomenon that spans across heterogeneous hardware, networks, and software – and therefore requires significant investment from vendors for successful market participation. This effort includes not only internal R&D into innovative technology but also externally focused ecosystem development, which beyond the typical partnerships and integrations may also include participation in consortia, test beds, and the like. While not every vendor can invest at the same dollar amount, IDC recommends ensuring that the platform vendor you partner with is seriously invested in IoT for the long run.
- **Industry knowledge:** There are unique industry challenges and business processes within different segments of manufacturing, and it is critical to understand these differences to be

successful in an IoT deployment. IDC recommends you work with a platform provider that recognizes the requirements for your industry. Included in this IDC MarketScape are providers with offerings for manufacturing, which includes product-centric organizations across four distinct value chains:

- **Asset-oriented value chain (AOVC)** – Industries include chemicals, metals, and pulp and paper.
- **Brand-oriented value chain (BOVC)** – Industries include consumer packaged goods (CPG), food and beverage (F&B), fashion, and life sciences.
- **Engineering-oriented value chain (EOVC)** – Industries include automotive, aerospace and defense (A&D), and industrial machinery.
- **Technology-oriented value chain (TOVC)** – Industries include electronics and semiconductor (high tech).

VENDOR SUMMARY PROFILE

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 the vendor's strengths and challenges.

PTC

PTC is positioned as a Leader in this worldwide 2019 IDC MarketScape for IIoT platforms in the manufacturing sector.

PTC is a provider of technology solutions that help industrial companies transform how they create, operate, and service smart, connected operations and products. The company's heritage is in the PLM and CAD space, offering solutions for digital engineering, manufacturing, and service organizations. Given the strategic importance of IoT in these industries, PTC has transformed itself around the company's IoT initiatives, and PTC's industrial IoT platform, ThingWorx, is key to the company's strategy and overall product road map. Over the past year, the company has entered into strategic partnerships with Rockwell Automation, Microsoft, and Ansys to strengthen its technology and go-to-market approach for IIoT.

Vendor IoT Platform Offering

- PTC's IIoT Platform is ThingWorx:
 - ThingWorx consists of a core IoT platform that allows developers and LOB staff to create IoT applications centered around the concept of a "thing model" and a set of prebuilt solutions that address common industrial IoT use cases.
 - The focus for ThingWorx is to provide the tools for organizations to source, contextualize, synthesize, and orchestrate their IoT data through various workflows while providing engaging experiences for end users of IoT applications.
- Another key component of PTC's industrial IoT strategy is the vendor's Kepware product. This product can translate a broad range of proprietary protocols into a common format to give applications a single source of industrial automation data.
- PTC's Vuforia Studio allows companies to leverage their IoT data in an augmented reality experience.

Vendor Vertical IoT Offering

- PTC offers solutions in three of the four manufacturing value chains (BOVC, EOVC, and TOVC), with discrete industries (EOVC and TOVC) being its largest manufacturing customer segments.
- PTC offers IIoT applications across all manufacturing DX strategic priorities, with field service and product innovation use cases being its strongest area.
- PTC has partnered with Rockwell Automation to offer the FactoryTalk InnovationSuite powered by PTC, which will bolster its smart manufacturing capabilities.

Strengths

- **Support for the connected product and service life cycle:** IoT is an enabling technology for designing, managing, and improving products, services, and experiences that manufacturers require today. PTC's software portfolio (IoT, AR, PLM, ALM, SLM) has the ability to support the integration, unification, and decision support of data, processes, resources, and people from business, IT, engineering, R&D, production, supply chain, and service.
- **Focus on digital/physical convergence:** The first step in IoT maturity is being able to visualize digital things and processes using IoT data; the next step is being able to interact with and optimize things and processes using simulation and augmented reality. PTC's product portfolio is well aligned to deliver on the vendor's vision within the manufacturing space.
- **Provide a flexible platform:** Customers cite that ThingWorx provides a highly flexible platform in terms of deployment methods and has the ability to connect to heterogeneous equipment types, and in the various ways, it allows end users to visualize their information.

Challenges

- **Competitive landscape:** The competitive atmosphere for IoT has changed over the past few years; it's becoming increasingly difficult for smaller vendors to compete against tech giants that can fold industrial IoT capabilities into other core product lines.
- **Analytics:** PTC needs to continue to improve its analytical capabilities across all solutions. Customers are deriving value from the analytics available, but some references indicated they would like more work in this area. The Rockwell partnership may provide more of the plant-level analytics that manufacturers desire.
- **Partner focus:** PTC is becoming increasingly focused on partners for its IoT strategy; the company will have to balance the demands from its partners against its own internal road map. In addition, partnerships in the IT/OT space can be particularly tricky as two companies that have traditionally been quite different try to go to market together. That said, the Rockwell Automation partnership encompasses shared product road maps, go to markets, and executive sponsorship on both sides.

Consider PTC When

- When current Rockwell Automation and other industrial customers should consider the FactoryTalk InnovationSuite that combines Rockwell's FactoryTalk Analytics and Manufacturing Operations Management platform with PTC's ThingWorx, Kepware, and Vuforia offerings (The solution is equipment agnostic, so it can work in mixed equipment environments.)
- When you're planning to leverage IoT to bring a connected product to market (PTC has products OEMs can leverage to gain visibility through the whole connected product life cycle, from engineering to customer service.)

- When you are looking for flexible IoT and AR application development tools that can be leveraged by technical or LOB staff.

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 represents 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

IDC's IoT software platform market is a competitive software market representing portions of selected application development and deployment and system infrastructure software markets. There are two main segments of the market that IDC currently tracks, IoT application platforms and IoT connectivity management platforms. Vendors in this study primarily sit in the IoT application platform segment of the market. Further:

- **IoT application platforms** are oriented toward developers who are looking for a consistent way to build and deploy IoT applications. Once the applications are deployed, however, these products may also be used by operations staff to manage the deployment and line-of-business users to visualize and take action on data. These platforms include a bundled set of capabilities required to connect, manage, and visualize IoT devices and data, often offered in a platform-as-a-service (PaaS) model. To participate in this segment of the market, a vendor must provide a bundled set of capabilities that at a minimum include IoT middleware and some level of data and device management capabilities. Usually, these platforms also include some

basic data visualization capabilities. Application development frameworks and tools, sophisticated visualization tools, and advanced analytics are highly complementary pieces of functionality, though not required for inclusion in this segment of the market.

- **Industrial IoT platforms** covered in this study represent a subsegment of the IoT application platform market that are specifically focused on providing applications with access to data gathered from industrial equipment and systems.

For a more detailed description of the IoT platform market, see *IDC's Worldwide Internet of Things Software Platform Taxonomy, 2018* (IDC #US43162818, August 2018).

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- **Technology-oriented value chain (TOVC)** – Industries include electronics and semiconductors (high tech).

LEARN MORE

Related Research

- *Transforming Asset Management at the Edge* (IDC #DR2019_T8_RP, March 2019)
- *The Industrial IoT Platform as the Core for OT and IT Convergence* (IDC #DR2019_T8_SC, March 2019)
- *Worldwide Internet of Things Forecast Update, 2018-2022* (IDC #US44755019, January 2019)
- *IDC PlanScope: Digital Transformation for Smart Manufacturing* (IDC #US44529118, December 2018)
- *IDC FutureScope: Worldwide Manufacturing 2019 Predictions* (IDC #EMEA43135818, October 2018)
- *IDC's Worldwide Internet of Things Software Platform Taxonomy, 2018* (IDC #US43162818, August 2018)
- *Worldwide Internet of Things Software Platform Forecast, 2018-2022* (IDC #US42635618, May 2018)
- *IDC Perspective: A Vertical View of the IoT Platform and Solution Market* (IDC #US43538718, April 2018)

Synopsis

This IDC study uses the IDC MarketScape model to provide an assessment of vendors participating in the industrial IoT platform market. This study specifically analyzed these offerings from a manufacturing industry perspective.

"IoT is a hot topic across all industries but even more so among manufacturers as the opportunity for transformation is largest," says Reid Paquin, research director, Manufacturing IT Priorities and Strategies (ITP&S). "Manufacturers are well underway in terms of adopting IoT into their products and processes, and the most advanced manufacturers are already changing the way they operate and their business models because of IoT"

"By providing industrial companies with a common way to access, manage, and visualize IoT data, as well as build and deploy IoT applications, industrial IoT platforms play a key role in supporting the goals of manufacturing organizations today," says Stacy Crook, research director, IoT, IDC.

About IDC

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