

# Magic Quadrant for Multiexperience Development Platforms

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Mobile apps, progressive web apps, conversational apps and immersive apps are among the many types of application that people use to interact with and within digital businesses. This Magic Quadrant will help application leaders assess vendors of MXDPs, which enable development of these types of app.

## Strategic Planning Assumption

By 2023, more than 25% of the mobile apps, progressive web apps and conversational apps at large enterprises will be built and/or run through a multiexperience development platform.

## Market Definition/Description

The term “multiexperience” refers to the various permutations of modality (touch, voice and gesture, for example), device and app with which users interact on their digital journeys across diverse touchpoints. Multiexperience development involves creating fit-for-purpose apps based on touchpoint-specific modalities, while at the same time ensuring a consistent user experience across web, mobile, wearables, conversational and immersive touchpoints. Multiexperience development is typically undertaken using a variety of technologies (see “Survey Analysis: Insights to Kick-Start an Enterprise Multiexperience Development Strategy”), but single platforms are emerging that bring together the required technologies.

This is the first Magic Quadrant for multiexperience development platforms (MXDPs), its predecessors having been Magic Quadrants for mobile app development platforms (MADPs). The change of name reflects the evolution of MADPs to serve expanding app use cases and development requirements. These requirements go beyond mobile apps to enable development of progressive web apps (PWAs), conversational apps (voice assistants and chatbots), immersive apps and wearable apps.

The MXDP market contains some of the largest enterprise software vendors that serve the needs of development teams. It also includes up-and-coming vendors that offer independent development platform options. All MXDPs support the need of professional developers to use high-control development tools (in other words, code-centric tools), and most also support development using low-code approaches for higher developer productivity. However, the primary purpose of these platforms is not to support low-code development, but rather the creation of

multiple types of app in support of the digital user experience across devices and interaction modalities.

## Magic Quadrant

Figure 1. Magic Quadrant for Multiexperience Development Platforms



Source: Gartner (July 2019)

### Vendor Strengths and Cautions

Note that all mentions in this section to customer satisfaction scores, survey respondents and reference customers refer to an end-user survey performed as part of our research for this Magic Quadrant (data was collected in March 2019). Vendor-identified reference customers scored various overall, functional, product and vendor customer relationship criteria on a scale of 1 to 5 (where 1 = extremely dissatisfied, and 5 = extremely satisfied). All mentions comparing a vendor's reference

customer feedback to the “average” refer to the calculated average score for each criterion across all included vendors (for more details about the survey, see the Evidence section). All reported customer counts are as of July 2019, unless otherwise indicated.

## Appian

Appian is a Visionary. Appian’s platform serves as an MXDP by supporting web, mobile and conversational app capabilities, although it is better-known as an intelligent business process management suite (iBPMS) and low-code application platform. Appian primarily serves the markets for iBPMSs and low-code application platforms, but is also gaining traction with its multiexperience development capabilities.

### Strengths

- **Viability and innovation:** Appian is a mature but growing vendor with deep experience of large-enterprise projects. As a publicly traded corporation, it is managed for growth by aggressively reinvesting in platform research and development. This bodes well for the future, given that it also has a strong vision for how to develop multiexperience apps on its platform. Appian received one of the highest reference customer survey ratings in this Magic Quadrant for its roadmap to support multiexperience development needs.
- **Process and workflow orchestration:** Appian’s outstanding business rules, process and decision engine capabilities make it a strong contender for multiexperience development in support of complex process-oriented use cases that are part of digital business initiatives.
- **Operations:** Appian has an impressive and growing set of cloud security certifications, and it invests in strict security requirements and audits that adhere to a variety of government security regulations. Additionally, reference customers reported above-average satisfaction with its service and support.

### Cautions

- **Code-centric developer tooling:** Appian focuses on a low-code approach to development. Although it provides plug-ins to Eclipse and IntelliJ integrated development environments (IDEs) for extensibility, its model-driven platform is not geared toward professional developers looking to work in a code-centric environment.
- **Sales execution:** Appian has a smaller customer base than other vendors in this Magic Quadrant, since it primarily competes for large projects with complex process automation and management needs. Prospective buyers with more of a focus on front-end app development needs may therefore find Appian’s platform overwhelming. Although Appian has changed its licensing to accommodate different usage models for different applications, its reference customers’ satisfaction scores for contract negotiation flexibility and adaptability were below average.
- **Marketing strategy:** Appian’s marketing strategy shows no sign of emphasizing the multiexperience development aspects of its platform. MXDP is just one aspect of the platform,

one that is jostling for priority in the vendor's go-to-market messaging and product investments. This may limit Appian's growth in the MXDP market, even though it has a solid product vision.

## GeneXus

GeneXus is a Niche Player. It distinguishes itself in the MXDP market by offering a flexible development platform that can generate code for web, mobile, wearable and conversational apps, and PWAs. GeneXus' platform is centered on the vendor's proprietary IDE, which enables developers to write apps in the GeneXus scripting language and then generate native and web code for multiple app types.

### Strengths

- **Code-centric developer tooling:** GeneXus has its own approach to model-driven development, using its descriptive programming language. The proprietary Windows-based GeneXus IDE is a rich development environment for professional developers. GeneXus generates custom code in Java, .NET, .NET Core, Java for Android, Swift, COBOL and RPG, as well as HTML5, JavaScript and CSS3. This enables developers to build apps in one environment and generate code for different types of app for different touchpoints, as needed.
- **Process and workflow orchestration:** GeneXus has a business process management suite incorporated into its platform that is based on the Business Process Model and Notation (BPMN) 2.0 standard. This gives developers an advantage when building process-centric apps across touchpoints. The vendor also offers a declarative rules language for defining business rules that are deployed in apps developed on its platform.
- **Mesh app and service architecture (MASA):** GeneXus' platform offers a service registry feature called the Knowledge Matrix, which enables developers to discover, share and publish services. The platform also offers a logging API that works in conjunction with the open-source Elastic Stack to facilitate a "big picture" view of services that helps avoid dependency problems. The platform has added new stream sources, such as Apache Kafka, Amazon DynamoDB, MongoDB and Elasticsearch.

### Cautions

- **Operations and sales strategy:** Despite efforts to further expand its operations and sales in other regions, particularly the U.S., GeneXus has not gained much traction outside its core customer bases in Latin America and Japan. Its reliance on partners outside its core regions has not yielded the same success as its direct sales efforts in Latin America.
- **Marketing execution and strategy:** GeneXus' strategy of having trial versions, student versions and user meetings to drive marketing has not yielded significant market expansion or penetration into global enterprises. The focus on exploiting word of mouth and building its installed base has not been enough to turn the company into a worldwide platform provider.
- **Low-code development:** The GeneXus IDE is scripting-heavy and lacks the more visual-centric features that the Leaders in this Magic Quadrant provide. Although the company's model-driven

scripting approach offers powerful capabilities, customers looking for graphical-design-oriented tooling may find it less capable than other MXDPs that take low-code approaches, although GeneXus has partners that offer integrated visual tooling.

## IBM

IBM is a Niche Player. Its IBM Mobile Foundation offering distinguishes itself in the MXDP market by providing flexible deployment options, including on-premises, private cloud, public cloud and managed service. Additionally, IBM Mobile Foundation is one of the few MXDPs offering integrated artificial intelligence (AI) services, which makes it more straightforward for developers to implement chatbots, machine learning (ML) models and other AI capabilities into their apps. IBM Mobile Foundation has an open client architecture model that supports native apps, popular hybrid frameworks and various tool choices for different types of developer, from those working on augmented reality (AR) to those focused on mobile and web apps.

### Strengths

- **Core back-end services:** Much of the value that IBM's MXDP offering delivers to customers comes from its robust and comprehensive back-end services. IBM Mobile Foundation offers strong support for API adapters used for back-end connectivity in support of MASA. Logic can be written in adapters to mash up data specific to a channel for consumption. In addition, Gartner observes that its strong core security capabilities are often important differentiators for customers choosing the platform.
- **AI services:** IBM Mobile Foundation provides out-of-the-box adapters for some IBM Watson cognitive services, such as Conversation, Discovery and Natural Language Understanding. Other Watson services, such as Speech to Text and Text to Speech, can be accessed using Watson APIs, and code can be generated using adapters.
- **Geographic strategy and operations:** IBM has a significant global presence as it operates in more than 175 countries. The company's Sales and Distribution organization manages dedicated country-based operating units, which gives it an advantage over other MXDP vendors that don't have region-based support across the globe. Reference customers' satisfaction scores for IBM's ability to meet all expectations set during the sales process, as well as for integration and deployment, were among the highest received by any vendor in this Magic Quadrant.

### Cautions

- **Offering strategy:** For the past couple of years, IBM has relied on partnerships for front-end development tooling on its platform, such as with Ionic and Mendix, but this approach entails separate product roadmaps and additional purchases by customers. However, in April 2019, IBM released a new low-code tool, the IBM Digital App Builder, which is part of IBM Mobile Foundation and as a replacement for the Eclipse IDE plug-in tool. Gartner views IBM's front-end tooling as a competitive weakness against leading vendors, though IBM Digital App Builder

should help close the gap. Additionally, reference customers gave below-average satisfaction scores for IBM's roadmap supporting multiexperience development needs.

- **Monitoring and analytics:** Although IBM Mobile Foundation comes with built-in client-side analytics for Android, iOS, Apache Cordova, Windows and React Native, surveyed reference customers gave the platform below-average scores for monitoring and analytics tools. More advanced analytics capability requires customizations or the addition of IBM Watson Customer Experience Analytics Mobile, but reference customers said they needed more out-of-the-box functionality for effective real-time tracking and analytics.
- **Process and workflow orchestration:** IBM Mobile Foundation received below-average satisfaction ratings from reference customers for its native process and workflow capability. Supporting such orchestration requires separate IBM products, notably IBM Digital Business Automation and IBM Cloud Functions. Customers can use the IBM business process management (BPM) adapter for IBM Mobile Foundation, which provides access to IBM's BPM REST APIs.

## Kony

Kony is a Leader. Its rebranded Kony Quantum platform distinguishes itself in the MXDP market with a strong track record for mobile app development, but it can also support smartwatch, AR and conversational apps, and PWAs.

### Strengths

- **Offering strategy:** Kony enables the delivery of high-end user experiences across multiple touchpoints. Its platform combines a low-code approach for developers with MASA best practices, through the use of API management and comprehensive back-end services.
- **Industry strategy:** Kony has strong presence in a number of industries, and partnerships with companies such as Tech Mahindra, CDW and Cognizant to deliver industry solutions. Its strongest focus is banking, with the Kony DBX platform offering a rich set of apps for digital banking.
- **Innovation:** Kony displays strong innovation in terms of the following: support for smartwatches, with a watch canvas within Kony Visualizer; AR support for ARKit, ARCore Wikitude and Vuforia; and PWA support in its tooling. It has also invested in the Kony IQ chatbot with a view to using AI and ML in the platform to improve development outcomes.

### Cautions

- **Customer experience of delivery and support:** Although all the surveyed reference customers for Kony would recommend the company, on average they gave it below-average satisfaction scores for important aspects of delivery and support: professional services, developer training, service and support, as well as integration and deployment. We also hear of these issues occasionally from Gartner clients, so potential customers should ensure that sufficient delivery resources are available and that internal development teams can receive enough training.

- **Sales execution and strategy:** Kony has yet to achieve large-scale success with its channel sales strategy, and Gartner has seen evidence of variable channel execution for customers. Additionally, as Kony pays more attention to the DBX offering for banking, its execution in the MXDP market may be impacted, so existing customers should monitor its account support.
- **Marketing execution:** Kony is best-known for mobile app development, but is increasingly competing with larger or more aggressive vendors that command broader market awareness. It is also in the middle of a major rebranding effort, which will affect its search marketing and existing brand equity.

## Mendix

A subsidiary of Siemens since August 2018, Mendix is a Leader. The Mendix Platform is differentiated in the MXDP market by a focus on multiexperience development productivity for citizen and professional developers, supported by a common MASA. The Mendix Platform emphasizes collaborative design and development efforts, including end users, designers, product owners and developers, in order to unite business and IT teams.

## Strengths

- **Viability and operations:** Siemens' acquisition of Mendix provides the stability and additional resources for Mendix to operate as an independent business unit. Mendix is one of only a few vendors to have established strategic relationships with key partners (such as SAP and IBM) and large-enterprise customers.
- **Low-code development:** The Mendix Platform strongly emphasizes visual- and model-driven development that supports a broad range of developer profiles. It provides a separate design-time environment for citizen developers (Mendix Studio) and a more robust development environment for professional developers (Mendix Studio Pro), thereby enabling apps to be supported across the two tools. Additionally, Mendix has invested in using AI with the Mendix Assist development approach to increase productivity.
- **MASA:** The Mendix Platform is based on an advanced MASA foundation that has enabled Mendix to extend its core web and mobile capabilities with multiexperience innovations. The platform supports multigrain services, as well as API and event-driven mediation, using a combination of microflows for composition and orchestration. Reference customers gave Mendix one of the highest satisfaction scores of the vendors in this Magic Quadrant for its ability to increase code, component and service sharing.

## Cautions

- **Business model:** Although Siemens helps give Mendix a strong and established market presence, its transaction of Mendix has also led to uncertainty among potential customers about its long-term impact. Mendix will continue to operate independently, but customers should keep abreast of potential changes to its product roadmap and investments due to Siemens' influence.

- **Market responsiveness:** Mendix has rearchitected its mobile client to use React Native, which replaces its use of Apache Cordova. Although Gartner sees this as a positive move, the switch means Mendix must catch up in terms of support for AR, which is slated for a late 2019 release. Additionally, reference customers reported issues with advanced mobile offline functionality and app release management that should have been addressed in Mendix's current release.
- **Sales execution and pricing:** Although Mendix achieved solid sales results in 2018, Gartner has witnessed sales execution inconsistencies since the acquisition by Siemens. A few Gartner clients have found Mendix to be unresponsive during the sales cycle, and some Mendix customers have voiced concerns about the rising cost of the platform as utilization increases. Although these concerns may represent outliers, prospective buyers may need to be patient during the sales process and scrutinize costs as platform usage increases.

## Microsoft

Microsoft is a Challenger. In the MXDP market, enterprises often consider Microsoft because its suite of Visual Studio and Azure products is known to meet the needs of professional developers. Its PowerApps and Flow products are increasingly used by IT and citizen developers, too. Together, these products form a platform suite that is widely adopted for multiexperience development, although Microsoft lacks a formal platform naming and packaging convention.

### Strengths

- **Product capabilities:** Visual Studio with Xamarin offers native-level mobile app development, while Microsoft Bot Framework supports conversational app development for both voice and chatbot use cases. Microsoft is also one of the vendors at the forefront of supporting PWA and immersive app development.
- **Viability and operations:** Microsoft has a massive developer community and ecosystem for all the products under its MXDP umbrella. By taking an unopinionated approach to its development platform, Microsoft allows customers to use what they need and to interchange other product and components comparatively easily. Operationally, Microsoft has significant resources to support and invest in its MXDP offering.
- **Market responsiveness:** Microsoft embraces open-source technologies and has been active not only in its .NET Core community, but also in the Apache Cordova, React Native and Linux Foundation communities. It also offers a number of marketplaces for Visual Studio and Azure, plus the GitHub Marketplace through its acquisition of GitHub.

### Cautions

- **Market understanding and marketing strategy:** Microsoft markets to developers and takes a bottom-up go-to-market approach to its MXDP offering – more so than the other vendors in this Magic Quadrant. Although it is important to win the hearts and minds of developers, Microsoft lacks a higher-level, unified strategic value proposition for its MXDP for IT and business leaders, who are the final decision makers.



- **Sales strategy:** Microsoft gains customers for its MXDP platform suite as a strong incumbent supplier of developer tools and platform services in many enterprises. However, potential customers may find that its sales support and licensing models are less coordinated and focused than other vendors from a platform-centric perspective.
- **Business model:** Although Microsoft has taken a leadership position in many open-source areas to expand its technology scope, it does not demonstrate a compelling vision to monetize that activity for its MXDP (its PWA Builder and Visual Studio Code products, for example, are evidence of this). Also, with engineering and go-to-market responsibilities spread across Azure, Visual Studio and Business Applications teams, Microsoft currently lacks a cohesive platform business model that ties together its MXDP products.

## Oracle

Oracle is a Leader. Oracle distinguishes itself in the MXDP market by extending its mobile app and web development capabilities to native chatbots, with trained AI models. Its MXDP offering is a suite of products that spans front-end tools and back-end services, consisting of Oracle Mobile Hub, Developer Cloud Service, JavaScript Extension Toolkit (JET), Digital Assistant, Visual Builder and API Catalog.

## Strengths

- **Core back-end services:** Oracle's core back-end services include a deep portfolio of preexisting connectors, particularly for Oracle SaaS applications. Additionally, it offers a breadth of robust services, such as location, push notifications, identity and single sign-on.
- **Customer experience:** Reference customers for Oracle reported some of the highest levels of satisfaction, compared with those of other vendors in this Magic Quadrant. In particular, Oracle's satisfaction scores were among the best for overall experience, integration and deployment, service and support, and ability to unify internal development activities.
- **Code-centric developer tooling:** The Visual Builder tool is built on Oracle JET and can generate standard JavaScript code for customization in any IDE. Additionally, Oracle provides SDKs that work with iOS, Android, Windows 10, React Native and Apache Cordova, so developers can use a wide range of familiar frameworks. Reference customers gave Oracle one of the highest satisfaction scores for developer training and support.

## Cautions

- **Marketing execution and strategy:** Despite having robust capabilities across multiple form factors and modalities, Oracle's MXDP attracts little interest outside Oracle-centric organizations, judging from interactions with users of Gartner's client inquiry service. The names and branding of the products within the platform have changed a few times over the years, which has led to some confusion in the market, even among existing Oracle customers.
- **AR and VR support:** Oracle currently does not support AR capabilities through its Apache Cordova-based mobile client and Visual Builder tool. It does, however, support ARKit and

ARCore through its native iOS and Android SDKs. Oracle also supports content management for AR and VR, but only if the customer purchases the separately licensed Oracle Content and Experience, a digital experience platform.

- **Low-code development:** Oracle has merged its web and mobile low-code development tools into one design-time environment, Visual Builder, but although this is a capable tool some reference customers identified a need for Oracle to improve its UI.

## OutSystems

OutSystems is a Leader. The OutSystems platform is a single, full-stack MXDP that emphasizes a low-code approach complemented by extensibility through coding. The platform supports the full app life cycle and helps achieve agility at scale using a modular architecture that has potential for heavy reuse, due to its application object model.

### Strengths

- **Product capabilities:** OutSystems supports broad multiexperience use-case scenarios enabled by the extensibility of its platform architecture, as well as its ability to generate code and add modules created in code and using SDKs. Reference customers' satisfaction with OutSystems' product capabilities was among the highest expressed for any vendor in this Magic Quadrant.
- **Marketing execution and strategy:** OutSystems' superior marketing efforts have helped it achieve a global presence and market awareness rivaling those of larger, publicly traded vendors. It has a presence across all major geographic regions and a very compelling messaging and value proposition for enterprises requiring platform modernization to support digital transformation.
- **Operations and market responsiveness:** Scores from reference customers place OutSystems among the top vendors for service and support, integration and deployment, and developer training. OutSystems has a very large and active developer community to supplement its own services and support. It also has centers of excellence within strategic partners, such as Deloitte and Cognizant.

### Cautions

- **Pricing:** As OutSystems focuses on larger, mission-critical projects, licensing costs can become an issue in terms of predictability and value for some customers, based on its application object licensing model. Although reference customers gave OutSystems an above-average score for contract negotiations, Gartner has encountered customers who report rising costs as they deploy additional applications or functionality.
- **Low-code citizen development:** Although OutSystems advertises itself as offering a low-code platform for both citizen and professional developers, the platform's development tooling is geared primarily to professional developers, or at least fairly technical app builders. Although it also offers a limited web-based IDE, OutSystems' focus is on a client-side native IDE that is attractive to professional developers but could overwhelm many nontechnical developers –

although template apps and wizards are provided. Reference customers and other clients that Gartner has spoken to indicated that significant training is required for citizen developers.

- **Industry strategy:** OutSystems has major customers and partners in several industries, but until recently it lacked specific industry solutions and a corporate-driven industry go-to-market strategy. The vendor is making industry solutions a priority for 2019, such as solutions for banking, insurance and higher education, but these may be immature relative to the established solutions of other vendors.

## Pega

Pega is a Visionary. Its Pega Infinity offering supports mobile, web, smartwatch and conversational app development using its MXDP tooling. The vendor differentiates itself in the MXDP market by enabling its Pega CRM Suite to be built in and upon its MXDP, thereby extending all of its CRM functionality via the MXDP (although investment in its CRM offering is not required).

### Strengths

- **Process and workflow orchestration:** Pega Infinity offers case flows, process flows and application-specific flows that are modeled natively in the system. Combined with customer journey visualization and a decision hub repository for all customer interactions, these features enable developers to design continuous customer experiences.
- **Microapp patterns:** Developers can design new functions or distribute parts of existing apps as microapps through the platform. An underlying role-based access control pattern and rule-driven conditions can determine the context, constraints and timing for microapp deployment. Chatbots can call and push microapp functions to a conversation participant, based on conversation logic.
- **MASA:** The design model for creating new microservices (asynchronous and autonomous) is the same as for microapps – by designing once and rendering as needed. Pega Live Data provides mediation across distributed systems to present virtualized views of business entities. MXDP back-end development supports Java, JavaScript, .NET and Node.js; front-end development supports Angular, NGINX and React frameworks.

### Cautions

- **Marketing execution and strategy:** Gartner observes a general lack of awareness of Pega's offering among potential MXDP customers, which the vendor needs to do more to remedy. But the main challenge lies in how Pega packages and goes to market with its platform, since it also competes in the iBPMS, robotic process automation, CRM and low-code application platform markets with essentially the same technologies and similar messaging.
- **Customer experience:** Reference customers expressed concerns about the requirement to have significant knowledge of Pega's platform before they could properly understand their implementation choices, as well as about insufficient support documentation for some features

and the need for more configuration than expected. Their satisfaction with Pega's developer training and support was below the average for vendors in this Magic Quadrant.

- **Sales strategy:** Pega derives minimal MXDP revenue from its channel partners. Its direct sales force also sells based more on the need for iBPMS and CRM than for development specifically. As a result, Pega may find it difficult to compete for MXDP business that does not involve those other capabilities.

## Progress

Progress is a Leader. Its MXDP offering is the Progress Kinvey platform, which includes technologies acquired and organically built in recent years to address code-centric and low-code multiexperience development. The cloud-native platform offers Kinvey Studio for building mobile apps based on NativeScript and PWAs based on Angular. It also offers Kinvey Chat for chatbot development and NativeScript plug-ins to support immersive and wearable apps.

## Strengths

- **Core back-end services:** Progress has one of the richest sets of connectors for enterprise data sources of any vendor in this market. In addition, its platform has strong data transformation capabilities and broad services, including notifications and authentication, with tight integration to a wide range of enterprise authentication offerings (such as Okta, Layer 7 SiteMinder and OpenID Connect).
- **Code-centric developer tooling:** Progress created the open-source NativeScript framework, which offers professional developers using the Angular framework the ability to incorporate native code for iOS and Android. Developers can access the full range of APIs that are in the native OSs. In addition, the Kinvey platform seamlessly integrates with a wide range of frameworks, including Kubernetes, Node.js, Electron and others. Kinvey back-end services are managed via a browser-based configuration tool.
- **AI services:** Kinvey Chat has extensive language capabilities, including native natural language processing (NLP) functionality, and integrates with most major messaging platforms. Its conversational capabilities can be extended to mobile and web apps. In addition, Progress has strong capabilities for building predictive analytics models.

## Cautions

- **Industry strategy:** Progress has historically served technology and manufacturing industries, but its only industry-specific solution is Progress Health Cloud. The Kinvey platform can still be used to develop a wide range of industry solutions, but other vendors have more industry accelerators and solutions for customers seeking domain-specific solutions.
- **Low-code development:** Progress retains its focus on professional developers. It has begun to roll out new tools focused on low-code developers, but this new effort has yet to prove itself in the market. Some reference customers for Progress identified the complexity of the current

offering as an issue, and their satisfaction scores for overall product capabilities were below the average.

- **Sales strategy and marketing execution:** For a company with over 1,500 employees and annual revenue of almost \$400 million, Progress has a relatively small, but growing, direct sales organization. It does have an active partner channel that contributes to its MXDP revenue, but selling directly to enterprises seems still to be a challenge for Progress. Additionally, with a string of acquisitions and product name changes over recent years, Progress has not gained much market awareness for its MXDP offering or marketed its platform effectively. Reference customers gave below-average satisfaction scores for the ability of its product roadmap to meet their multiexperience development needs, despite expressing above-average satisfaction with the overall experience.

## Salesforce

Salesforce is a Leader. It distinguishes itself in the MXDP market by combining low-code and high-control development across its platform, backed by a common metadata model and app components. The Salesforce Lightning Platform, Heroku, Salesforce Mobile SDK, Einstein Voice and Einstein Bot Builder make up an MXDP offering that supports multiexperience development by both business and IT teams.

### Strengths

- **Low-code development:** Salesforce provides a variety of low-code approaches for web and mobile app and chatbot development — all backed by extensive training from its Trailhead community. The Salesforce Lightning Design System also helps enforce user experience consistency through UI patterns, navigation models and web components. Reference customers for Salesforce gave one of the highest satisfaction scores for its offering's ability to unify internal development team activities.
- **Viability and innovation:** Salesforce continues to invest heavily in its MXDP capabilities spanning low-code and high-control development tools. Its development platform is suitable for a wide range of personas, from citizen developers (using drag-and-drop editors) to professional developers (using SDKs and third-party tools). Reference customers' satisfaction with Salesforce's roadmap to support their multiexperience needs was among the highest for any vendor in this Magic Quadrant.
- **Industry strategy:** Salesforce has significant customer traction and strategic delivery partners in nearly every industry. It also focuses on a few key industries with its Financial Services Cloud, Health Cloud, Government Cloud and Philanthropy Cloud solutions.

### Cautions

- **Offering strategy:** Salesforce's MXDP offering has the makings of a powerful platform, but the separate product components indicate a lack of a cohesive platform strategy. The offering is spread across Salesforce's Lightning Platform, Heroku and Einstein products, which leads to

ambiguity and uncertainty about the coherence of the vendor's vision for multiexperience development.

- **Sales strategy:** Salesforce continues to rely on its SaaS customer base to upsell its MXDP offering, which leaves the platform's value proposition more vulnerable to competitors if potential customers have not already made significant investments with Salesforce. Reference customers also reported below-average satisfaction with Salesforce's contract negotiation, and Gartner has come across customers with concerns about pricing complexity.
- **Market responsiveness:** Given the complexity and interconnectedness of Salesforce's MXDP offering, it may be slower to respond to market changes and customer demand than other vendors, especially as some customers continue to wrestle with migrations from Salesforce Classic to Lightning. In particular, reference customers pointed to inconsistent support for DevOps and a need for more advanced mobile app functions, such as bar code scanning.

## SAP

SAP is a Challenger. Its MXDP offering, the SAP Cloud Platform, places strong emphasis on integration by providing integration between multiple developer tools, out-of-the-box integration with a wide variety of third-party systems, and straightforward integration with SAP business applications. SAP's MXDP offers several technologies, including SAP Fiori app templates, SAPUI5 hybrid and native SDKs, PWAs and model-driven apps, all of which deliver a common SAP Fiori user experience. SAP Web IDE is the company's primary professional developer tool for building multiexperience apps.

### Strengths

- **Core back-end services:** SAP has introduced Backend Service Generator to provide an easy way to visually design an app persistence layer or add custom app logic that orchestrates multichannel engagement. The SAP Cloud Platform integration service is often used to create composite/mashup services, and supports protocol conversion, complex data transformation and data orchestration.
- **Business model:** SAP Cloud Platform has two main pillars in this regard: direct subscription and consumption-based, and indirect revenue via multiple partner models (white-label OEM and independent software vendor apps). SAP has increased its focus on the partner channel by running a program with Accenture and undertaking joint customer engagements with many midsize partners in its PartnerEdge program.
- **Low-code development:** SAP Cloud Platform offers multiple options for low-code development, which can be used depending on the requirements of the customer's project. Options include SAP Cloud Platform Rapid Application Development (RAD) by Mendix, SAP Cloud Platform Mobile Services (includes model-driven visual app creation) and SAP Web IDE (supports low-code options including high-productivity extensions for mobilizing SAP Fiori applications).

### Cautions

- **Offering strategy:** Reference customers' satisfaction with SAP's overall product capabilities and product roadmap were below the average for vendors in this Magic Quadrant. Although the branding and licensing of SAP's MXDP have unified under SAP Cloud Platform, there are many underlying products and components that make it challenging for customers to discern which products they should invest in for the long term.
- **Marketing execution and customer service experience:** SAP Cloud Platform's past rebranding from SAP HANA Cloud Platform continues to cause some confusion about documentation and support, according to a few reference customers and some Gartner clients. Enterprises view SAP's mobile capabilities as just SAP Fiori apps or legacy tools (such as the Syclo apps), which may indicate a lack of customer education about SAP's MXDP value proposition. Additionally, SAP's reference customer satisfaction scores for service and support were below the average for vendors in this Magic Quadrant.
- **Monitoring and analytics:** SAP Cloud Platform SDKs provide a logging component and microservice to capture client-side issues and states, but reference customers scored SAP Cloud Platform weakly for this feature. Their reasons included a perception that the platform needs more transparency and analytics features relating to the usage of apps and app content.

## ServiceNow

ServiceNow is a Niche Player. Its Now Platform provides development capabilities for mobile and web apps, as well as chatbots. It positions itself in the MXDP market by offering multiexperience development in the context of custom workflow applications, for which it exploits its scale as a SaaS provider and takes a low-code development approach.

## Strengths

- **Low-code development:** The low-code capabilities of the ServiceNow Studio environment enable professional and citizen developers to create complete applications. The environment does so by offering low-code support ranging from data modeling to business logic, process automation, integration, and UIs for mobile/web apps and chatbots through its virtual agent.
- **Operations and geographic reach:** As a global SaaS provider, ServiceNow offers its Now Platform on the same global cloud application platform and with a single dataset, which offers high reliability and scalability. The company also has a presence and partnerships in all major geographic regions.
- **Market responsiveness:** ServiceNow has managed to enter this highly sophisticated market quickly, thanks primarily to its acquisition of SkyGiraffe in late 2017. It is gaining momentum from customers and partners using its ServiceNow Store as an app marketplace and its Share offering as a developer community.

## Cautions

- **Product capabilities:** Although ServiceNow's Now Platform is mature, its MXDP capabilities, particularly for mobile and conversational apps, are relatively immature in comparison with

those of other vendors evaluated in this Magic Quadrant. Much of its mobile app development technology comes from SkyGiraffe, and was only fully integrated and launched as part of the Now Platform at the start of 2019. Immersive apps are not yet supported. Some reference customers said they would recommend the platform with qualifications relating to the newness of the mobile and conversational capabilities.

- **Sales execution and sales experience:** Reference customers reported below-average satisfaction with many facets of ServiceNow's sales execution. In particular, this small subset of customers gave scores lower than the all-vendor average for software licensing, professionalism in sales engagement, meeting of expectations set during the sales process, and flexibility in negotiating contracts.
- **Marketing execution and strategy:** ServiceNow has only just started to compete in the MXDP market specifically, so awareness of its multiexperience development capabilities is low. Its marketing and positioning of the Now Platform as an MXDP trail that of many vendors in this Magic Quadrant.

## Vendors Added and Dropped

We review and adjust our inclusion criteria for Magic Quadrants as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant may change over time. A vendor's appearance in a Magic Quadrant one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. It may be a reflection of a change in the market and, therefore, changed evaluation criteria, or of a change of focus by that vendor.

As a result of the refocusing of this year's Magic Quadrant on MXDPs, rather than MADPs, one vendor has been added and seven vendors have been dropped:

### Added

- ServiceNow

### Dropped

- ApiOmat
- Betty Blocks
- DSI
- i-exceed
- MobileFrame
- Red Hat
- Resco



## Inclusion and Exclusion Criteria

To be included in this year's Magic Quadrant, each vendor had to meet the following criteria:

- The vendor must demonstrate a go-to-market strategy for its development platform across mobile apps, the web and conversational experiences.
- At minimum, the platform must support cross-platform development and building of custom iOS and Android app binaries (that is, it should not require separate vendor involvement or services to generate or build any new custom binaries), and responsive web apps. It must also support development of at least two of the following categories:
  - *PWA*: PWA service worker support within a development tool.
  - *Chatbot*: Built-in chatbot framework or tight integration of development tool with external bot frameworks (such as Alexa/Amazon Lex, IBM Watson, Dialogflow and Microsoft Bot Framework).
  - *Voice app*: Built-in NLP and speech-to-text, or tight integration of development tool with voice platforms (such as Alexa Skills and Actions on Google).
  - *Wearable*: Wearable UI support within development tool (such as for Apple Watch, Wear OS and Microsoft HoloLens).
  - *Augmented reality (AR) and virtual reality (VR)*: Immersive UI support within development tool (using, for example, ARKit, ARCore or Wikitude).
- The vendor must offer back-end services within the platform for all of the following:
  - Offline data synchronization
  - User authentication services
  - Push notifications
  - Location services
- The vendor must also meet at least one of the following criteria:

*Either:*

- The vendor must have generated at least \$30 million in revenue in 2018 from MXDP software and/or subscription licensing (excluding professional services).

*Or:*

- The vendor must have at least 40 existing paying enterprise customers in total, each of which must have deployed its MXDP in a production environment for at least 100 end users.
- *And* the vendor must have added at least 20 new paying enterprise customers for its MXDP in 2018 (with each having licensed at least 100 end users) in at least two of the following regions:
  - North America
  - South America
  - Europe
  - Middle East and Africa
  - Asia/Pacific

We excluded from this Magic Quadrant vendors that:

- Offered only platform as a service (PaaS) or back-end services *without* a front-end development tool/IDE with which to build apps or experiences.
- Required a specific third-party component or product that is *not* already “white-labeled” into the platform (that is, the MXDP has to be branded, sold and supported directly by vendor).
- Only sold their platform along with development/professional services, the tool being used exclusively by the vendor’s consultants.
- Required the purchase and/or installation of other unrelated products or platforms offered by the same vendor (for example, a CRM application or content management system).
- Did not sell a commercial enterprise offering (that is, they charged no software or subscription fees) or planned to retire the platform by the end of 2019.

## Honorable Mentions

Although we evaluate only 13 vendors in this year’s Magic Quadrant due to its revised inclusion and exclusion criteria, many other vendors are worthy of consideration. They include:

- Amazon
- ApiOmat
- Convertigo
- Google
- i-exceed

- MobileFrame
- Neptune Software
- Resco
- Unvired
- XOne

## Evaluation Criteria

### Ability to Execute

**Product or service:** We evaluate each vendor's breadth and depth of products and features across the software development life cycle, and favor support for a broad range of app types. We look for, among other things, design and user experience capabilities, simplicity of development, ease of integration, richness of back-end services, DevOps support (such as continuous integration/continuous deployment [CI/CD], testing, version and release management) and analytics. More specifically, we examine:

- *Low-code development:* How does the platform support development using drag-and-drop, declarative, model-driven, metadata-driven or other noncoding approaches to create a variety of app types?
- *Code-centric developer tooling:* How does the platform provide developers with a code-centric approach to designing and building apps either using an IDE supplied by the MXDP or via a plug-in to an open-source IDE (such as Eclipse or Visual Studio Code)?
- *Microapps patterns:* How does the platform support reusable app components or app building blocks from a design and architecture perspective to enable portability across app types?
- *Mesh app and service architecture (MASA):* How does the platform architecture support microservices, API mediation, serverless and event-driven requirements?
- *Monitoring and analytics:* How does the platform capture, correlate and report on the performance and usage of apps built and run on it?
- *Core back-end services:* How does the platform provide reusable app services (such as location services, push notifications, offline synchronization, user management, and data and file storage), as well as integration and API design and orchestration?
- *AI services:* How does the platform provide built-in or tightly integrated cloud AI services (such as NLP, image recognition and sentiment analysis) for use within apps?
- *DevOps support:* How does the platform offer embedded or integrated tooling to support agile development, CI/CD, test automation, version control and release management, to facilitate DevOps automation?

- **Process and workflow orchestration:** How does the platform support the designing and orchestrating of app workflows and processes from existing systems, or support new ones within and across apps?
- **AR/VR support:** How does the platform support immersive interfaces using SDKs (such as ARKit, ARCore, WebAR and Wikitude) or specific device platforms (such as HoloLens and Magic Leap One)?

**Overall viability:** We examine each vendor's research-and-development spending and resources, the growth of its MXDP business, and its financial profitability or funding/capitalization.

**Sales execution/pricing:** We look for a broad sales reach across geographies and industries, effective sales operations – in light of, for example, long or short sales cycles – and simple pricing models.

**Market responsiveness and track record:** We examine how quickly each vendor's products are released and adopted, and how new multiexperience capabilities are supported, both using the vendor's resources and through partnerships.

**Marketing execution:** We look for general awareness of the vendor in the market, and any negative or positive perceptions of the vendor across IT and business units. We also consider how easily buyers understand a vendor's differentiators.

**Customer experience:** We examine customer deployments across a variety of app types and use cases, the vendor's ability to meet and exceed customers' expectations, and the ease of onboarding and training on its platform. Results from our survey of reference customers are important measures of customer satisfaction.

**Operations:** We look for growth in the MXDP business operations and staffing level, stability in leadership vision and strength of customer service.

**Table 1: Ability to Execute Evaluation Criteria**

Evaluation Criteria ↓	Weighting ↓
Product or Service	High
Overall Viability	Medium
Sales Execution/Pricing	High
Market Responsiveness/Record	Medium
Marketing Execution	High

Evaluation Criteria ↓	Weighting ↓
Customer Experience	Medium
Operations	Low

Source: Gartner (July 2019)

## Completeness of Vision

**Market understanding:** We look for an understanding of how to address the needs of development teams in IT and business units, as well as third-party developers, for delivering a wide range of apps supporting a multiexperience strategy.

**Marketing strategy:** We look for strong brand recognition, thought-leading product messaging and outreach programs that succeed in an emerging market category.

**Sales strategy:** We look for a strong go-to-market strategy focused on selling an MXDP to CIOs, enterprise IT and business unit leaders responsible for application delivery and the user experience.

**Offering (product) strategy:** We look for a strong understanding of enterprise needs across the development life cycle of web, mobile, conversational and immersive apps.

**Business model:** We examine product revenue growth and the ease of doing business with customers. We also look for a strong partner ecosystem that amplifies the vendor's go-to-market strategy.

**Vertical/industry strategy:** We look for differentiating capabilities built for specific industries and multiexperience vertical solutions (for example, industry-specific connectors, app templates and regulatory compliance support). Vendors may have a focused go-to-market approach for specific industries, including industry-specific partnerships.

**Innovation:** We look for technological advances that support broader multiexperience development, and other capabilities that support MASA, multicloud deployment and Internet of Things gateways.

**Geographic strategy:** We look for diverse customer deployments across regions, delivery and reseller partner networks, and market awareness across the globe, as well as in-country vendor presence.

**Table 2: Completeness of Vision Evaluation Criteria**

Evaluation Criteria ↓	Weighting ↓
Market Understanding	High

Evaluation Criteria ↓	Weighting ↓
Marketing Strategy	Medium
Sales Strategy	Medium
Offering (Product) Strategy	High
Business Model	Medium
Vertical/Industry Strategy	Low
Innovation	High
Geographic Strategy	Low

Source: Gartner (July 2019)

## Quadrant Descriptions

### Leaders

Leaders have strong capabilities in mobile app and web development, and demonstrate a compelling product vision and commitment to multiexperience development in their platforms. They have large customer bases and robust partner ecosystems, and have shown healthy growth in this market. However, this market is rapidly evolving, so Leaders might not stay Leaders for long.

### Challengers

Challengers have compelling technology and significant customer deployments and partner channels. However, they lack a clear vision and direction with regard to the product and business aspects of meeting the needs of the MXDP market. Challengers need to focus on improving platform packaging, pricing and other components of their go-to-market strategy in order to compete better.

### Visionaries

Visionaries demonstrate excellent understanding of the MXDP market and have the technical and go-to-market wherewithal to excel. However, they are typically less well known than Challengers and Leaders, and have smaller customer bases for their MXDPs. Visionaries need to outmarket their competitors and gain more scale through partnerships in order to succeed in this market in the long run.

### Niche Players

Niche Players are not widely known for their MXDP capabilities. From a go-to-market perspective, they focus narrowly, and they have yet to show as much commitment as other MXDP vendors to

their product vision and sales and marketing strategy. Niche Players have the technology foundation to compete in this market, but they must invest decisively as MXDP providers if they are to outmaneuver their competitors.

## Context

A MXDP should serve as a technological cornerstone of your application development strategy for many years to come. It will be a major influence in terms of shaping your development practices and team skills around its capabilities. Some companies may already be using more than one of the vendors in this Magic Quadrant for app development. Determine whether one of the featured vendors' platforms stands out as the best choice for your primary MXDP. The following recommendations will help:

- If you don't already use a MXDP, evaluate and deploy one if your organization is starting to develop and deploy multiple app types (such as mobile apps, web apps/PWAs and chatbots) to meet the needs of employees and customers.
- If you have been using a MADP whose vendor that has been dropped from this year's Magic Quadrant, don't panic. Evaluate its planned releases for 2019 and product roadmap for 2020 to determine the suitability of its capabilities to support your expanding multiexperience development needs.
- If you use a MXDP that no longer meets your needs, start evaluating other platforms, but don't expect to easily migrate your existing apps to a new platform. There are both client-side and server-side complications when it comes to changing platforms. Also, consider whether it may be better to supplement any missing capabilities by adding new frameworks, tools or services that can integrate with your MXDP.
- If you use a MXDP and are satisfied with it, you should still assess its capabilities and roadmap features at least every six to 12 months to ensure that it continues to suit your organization's expectations and plans. The technology landscape for PWAs, conversational and immersive apps is evolving rapidly, so platforms could fall behind in any one of these areas.

## Market Overview

MXDPs are not "build once, run everywhere" or "omnichannel" solutions. The core value of an MXDP lies in its ability to coalesce software development life cycle activities across a range of apps to address the digital user journey. The need for this ability will only increase as the number of apps, devices and modes of interaction increases.

Gartner expects more competitors to enter the MXDP market over the next two years, particularly large application PaaS vendors that already target development teams. Acquisitions of smaller best-of-breed mobile, conversational or immersive development vendors could also propel the acquirers into the MXDP market. We expect the market's expansion to accelerate as the underlying technologies for PWAs, conversational and immersive apps mature over the next two to five years.

Vendor success in the MXDP market is predicated on serving the complex needs of development teams in IT departments and increasingly in business units as well. These professional developers form product delivery teams that must create and support multiple app types for their target user segments. An MXDP may be used to support citizen developers, but they are not the main users of MXDPs.

Gartner expects that custom mobile app development will remain the main driver of adoption of MXDPs over the next two years. The ability to create PWAs will also become an important criterion as MXDPs increasingly support a broader mobile user experience.

Conversational app development will grow in prominence and volume as the tooling and user experience improve. These apps will be deployed as chatbots within custom mobile and web apps, as well as part of popular chat platforms, such as Facebook Messenger, Slack and WeChat. For the most part, voice apps will be tied to the Amazon Alexa and Google Home platforms.

In terms of immersive app development, we expect AR use cases on iOS and Android to be the primary focus for MXDPs. Support for VR and specialized hardware for immersive use cases will be specific to platforms that cater to specific industry solutions. Wearable apps will have smartwatches as their primary targets for the next two years.

## Evidence

For this Magic Quadrant, Gartner's primary research included analysis of product demonstrations. We also conducted surveys of vendors and reference customers identified by vendors between February and March 2019. In addition, information from Gartner's client inquiry service was used during the evaluation process.

## Evaluation Criteria Definitions

### Ability to Execute

**Product/Service:** Core goods and services offered by the vendor for the defined market. This includes current product/service capabilities, quality, feature sets, skills and so on, whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.

**Overall Viability:** Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood that the individual business unit will continue investing in the product, will continue offering the product and will advance the state of the art within the organization's portfolio of products.

**Sales Execution/Pricing:** The vendor's capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support, and the overall effectiveness of the sales channel.

**Market Responsiveness/Record:** Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and



market dynamics change. This criterion also considers the vendor's history of responsiveness.

**Marketing Execution:** The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional initiatives, thought leadership, word of mouth and sales activities.

**Customer Experience:** Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on.

**Operations:** The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure, including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

## Completeness of Vision

**Market Understanding:** Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen to and understand buyers' wants and needs, and can shape or enhance those with their added vision.

**Marketing Strategy:** A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements.

**Sales Strategy:** The strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service, and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

**Offering (Product) Strategy:** The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature sets as they map to current and future requirements.

**Business Model:** The soundness and logic of the vendor's underlying business proposition.

**Vertical/Industry Strategy:** The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including vertical markets.

**Innovation:** Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.

**Geographic Strategy:** The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through

partners, channels and subsidiaries as appropriate for that geography and market.

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