

The Forrester Wave™: Low-Code Development Platforms For AD&D Professionals, Q1 2019

The 13 Providers That Matter Most And How They Stack Up

by John R. Rymer and Rob Koplowitz

March 13, 2019

Why Read This Report

Our 28-criterion evaluation of low-code development platforms for application development and delivery (AD&D) professionals assesses the 13 most significant suppliers — Clear Software, GeneXus, Kony, MatsSoft, Mendix, Microsoft, OutSystems, Progress Software, Salesforce, ServiceNow, Skuid, Thinkwise, and WaveMaker. This report shows how each provider measures up and helps AD&D pros select the right one for their needs.

Key Takeaways

Microsoft, OutSystems, Mendix, Kony, And Salesforce Are Leaders

Forrester's research reveals a market in which Microsoft, longtime rivals OutSystems and Mendix, Kony, and Salesforce are Leaders; ServiceNow, GeneXus, and Progress Software are Strong Performers; MatsSoft, WaveMaker, and Thinkwise are Contenders; and Skuid and Clear Software are Challengers.

Features For Digital-Business Use Cases Set Apart The Leaders

Development services for basic web and mobile applications, including standards for integration, basic data management and mapping, workflow, development process support, and application and identity administration, are table stakes. The leading vendors have also moved into business process automation, real-time applications, and AI services, as well as large, mission-critical apps.

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March 13, 2019

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Related Research Documents

- [The Forrester Wave™: Low-Code Development Platforms For AD&D Pros, Q4 2017](#)
- [Now Tech: Rapid App Delivery, Q1 2019](#)
- [The State Of Low-Code Platform Adoption, 2018](#)



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Low-Code For AD&D Professionals Vendors Expand Enterprise Value

Enterprise development teams are adopting low-code development platforms, and the market's growth prospects appear rosy. In our survey of global developers, 23% reported using low-code platforms in 2018, and another 22% planned to do so within a year.¹ Digital businesses' demand for ever more software ever more quickly is the big driver of adoption. But our assessment of 13 leading platforms also reveals vendors removing previous limitations on low-code adoption — even by supporting coding. Vendors in this segment now:

- › **Provide solid features for common use cases; differentiated vendors add depth.** Tools and features to deliver web and mobile user experiences, including sophisticated forms, page navigation, and single-page apps, are now common across most of these vendors. So too are basic data management and reporting, workflow automation, and collaboration tools and features. Differentiated products include tools for pixel-perfect native mobile apps, natural language processing, event-management applications, and apps incorporating machine learning and case and content management.
- › **Power projects with integral coding, as well as business expert participation.** Some vendors allow developers to work in either code or declarative tools — their choice. Embedded integrated development environments and code editors free developers to build features outside of the low-code platform's framework but manage that code within projects. "Code behind" approaches allow developers to swap back and forth between graphical and coding views of their apps. Several of the vendors added tools designed for business experts, which allow them to contribute to development projects. Contributions range from screen and workflow prototypes to sections of projects.
- › **Automate governance and production management.** Leading vendors are also adding features for enterprise AD&D teams to govern development processes and application change in large app and service portfolios, as well as provide data loading and synchronization in production apps and automated error reporting and handling.

Evaluation Summary

The Forrester Wave™ evaluation highlights Leaders, Strong Performers, Contenders, and Challengers within a market. It's an assessment of the top vendors in the market and does not represent the entire vendor landscape. You'll find more information about this market in our reports on low-code development and digital process automation platforms.²

This evaluation is a starting point only. View the details of our assessments in the accompanying Excel-based tool, and create custom weightings to reflect your organization's priorities and critical needs (see Figure 1 and see Figure 2). Click the link at the beginning of this report on Forrester.com to download the tool.

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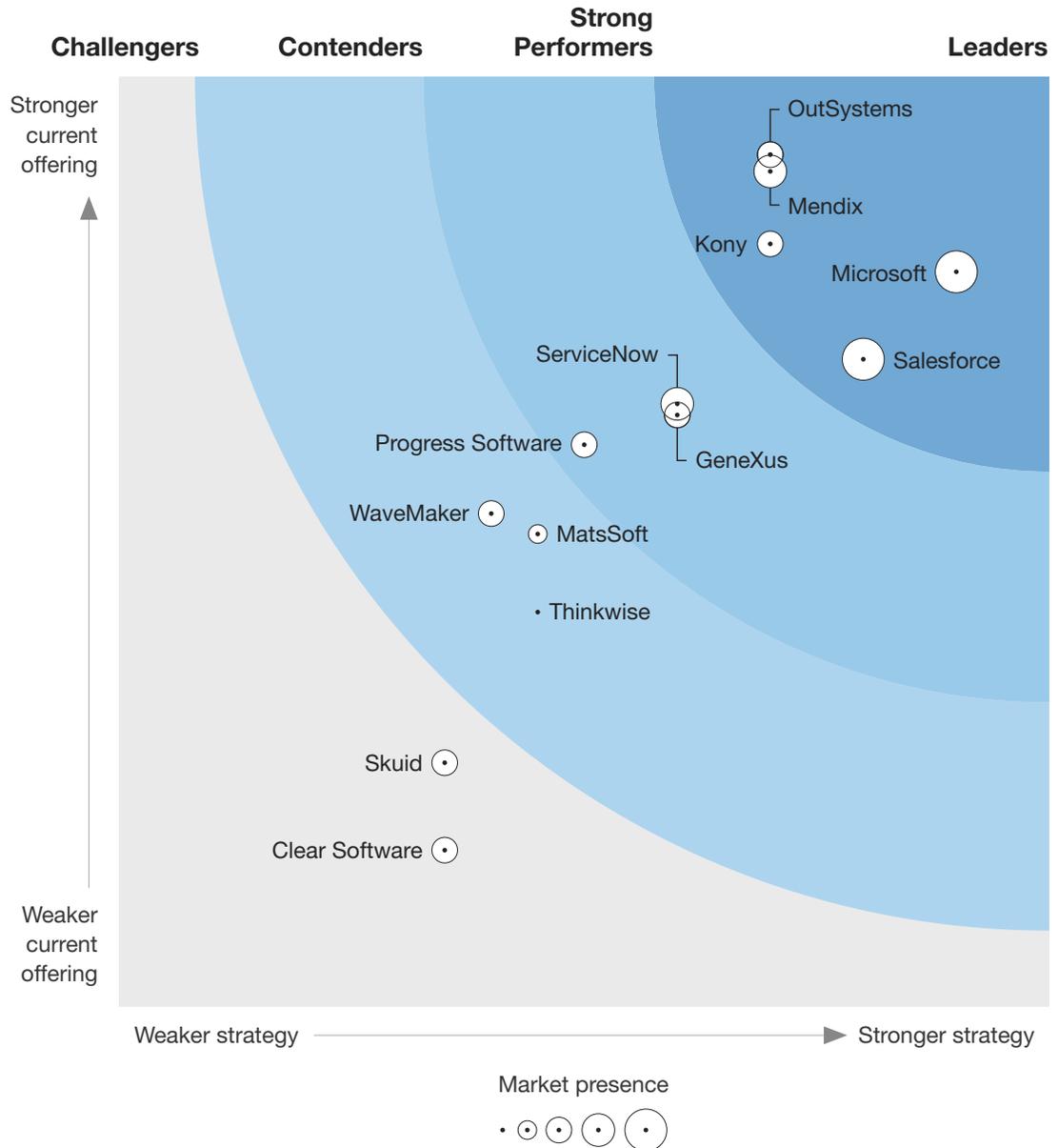
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FIGURE 1 Forrester Wave™: Low-Code Development Platforms For AD&D Professionals, Q1 2019

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Low-Code Development Platforms For AD&D Professionals

Q1 2019



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FIGURE 2 Forrester Wave™: Low-Code Development Platforms for AD&D Professionals Scorecard, Q1 2019

	Forrester's weighting	Clear Software	GeneXus	Kony	MatsSoft	Mendix	Microsoft	OutSystems
Current offering	50%	0.84	3.18	4.10	2.54	4.49	3.95	4.58
Tooling for application development	33%	1.54	3.34	3.90	2.82	4.28	4.26	4.14
Tooling for platform and app admin	33%	0.60	3.00	4.60	2.60	5.00	3.80	5.00
App deployment, ops tools, and features	34%	0.40	3.20	3.80	2.20	4.20	3.80	4.60
Strategy	50%	1.75	3.00	3.50	2.25	3.50	4.50	3.50
Vision and strategy	25%	1.00	3.00	5.00	5.00	5.00	5.00	5.00
Training, community, and marketplace	25%	3.00	3.00	5.00	3.00	3.00	5.00	3.00
Partners	25%	0.00	3.00	1.00	0.00	3.00	5.00	3.00
Commercial model	25%	3.00	3.00	3.00	1.00	3.00	3.00	3.00
Market presence	0%	2.32	2.69	2.34	1.67	3.33	4.67	2.67
Revenue from low-code platform sales	33%	1.00	2.00	3.00	1.00	3.00	4.00	3.00
Revenue growth rate	33%	5.00	1.00	1.00	2.00	4.00	5.00	2.00
Number of enterprise customers	34%	1.00	5.00	3.00	2.00	3.00	5.00	3.00

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FIGURE 2 Forrester Wave™: Low-Code Development Platforms for AD&D Professionals Scorecard, Q1 2019 (Cont.)

	Forrester's weighting	Progress Software	Salesforce	ServiceNow	Skuid	Thinkwise	WaveMaker
Current offering	50%	3.02	3.48	3.24	1.31	2.12	2.65
Tooling for application development	33%	3.06	4.06	3.34	2.16	1.98	2.16
Tooling for platform and app admin	33%	3.00	3.80	3.40	1.20	3.40	3.20
App deployment, ops tools, and features	34%	3.00	2.60	3.00	0.60	1.00	2.60
Strategy	50%	2.50	4.00	3.00	1.75	2.25	2.00
Vision and strategy	25%	3.00	3.00	3.00	3.00	3.00	3.00
Training, community, and marketplace	25%	1.00	5.00	3.00	3.00	3.00	1.00
Partners	25%	3.00	5.00	5.00			1.00
Commercial model	25%	3.00	3.00	1.00	1.00	3.00	3.00
Market presence	0%	2.34	4.01	4.00	2.33	1.00	2.66
Revenue from low-code platform sales	33%	3.00	5.00	4.00	2.00	1.00	1.00
Revenue growth rate	33%	1.00	2.00	4.00	3.00	1.00	5.00
Number of enterprise customers	34%	3.00	5.00	4.00	2.00	1.00	2.00

Vendor Offerings

Forrester included 13 vendors in this assessment: Clear Software, GeneXus, Kony, MatsSoft, Mendix, Microsoft, OutSystems, Progress Software, Salesforce, ServiceNow, Skuid, Thinkwise, and WaveMaker (see Figure 3).

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FIGURE 3 Evaluated Vendors And Product Information

Vendor	Product evaluated	Version evaluated
Clear Software	Clear Work and Clear Process	V 3.6.4.93
GeneXus	GeneXus 16	V 16 upgrade 1
Kony	Kony AppPlatform	V 8
MatsSoft	MATS	V 10.2
Mendix	Mendix Platform	V 7
Microsoft	Microsoft PowerApps	N/A
OutSystems	OutSystems Platform	N/A
Progress Software	Progress Kinvey	N/A
Salesforce	Salesforce Platform (Lightning Platform)	V Winter '19
ServiceNow	Now Platform	V London
Skuid	Skuid Spark	V 12
Thinkwise	Thinkwise Platform	V 2018.3
WaveMaker	WaveMaker	V 10

Vendor Profiles

Our analysis uncovered the following strengths and weaknesses of individual vendors.

Leaders

- › **Microsoft leaps to the top tier, but its product lineup may confuse.** Microsoft has fully delivered its PowerApps platform after years of unfurling. In our last assessment (2016 to 2017), PowerApps was too limited for AD&D pros but good for business developers. PowerApps is now a leading choice among low-code platforms for AD&D pros, although reference customers suggest it isn't yet widely used at enterprise scale. The platform offers powerful features for developing web and mobile user experiences, a big catalog of integration adapters, and affinity to Excel in its scripting tool that business developers will appreciate.

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PowerApps' weakness: It is part of a product line that can confuse. The product works with Visual Studio, but customers require additional licenses and project coordination. For reporting and analysis, Microsoft offers Power BI to supplement PowerApps — a strong product but, again, additional licenses and process integration required. The Flow component of PowerApps falls short of the leaders in digital process automation, but it will be accessible for business experts.

- › **OutSystems sets the pace in feature breadth.** Two characteristics stand out for OutSystems as a low-code vendor: its relentless addition of features for AD&D pros and its consistent delivery on road-map and strategy objectives. The vendor has delivered on its past goals, including native mobile apps, scale and reliability to tackle core transactional business apps, and global presence. OutSystems keeps pushing the boundaries of low-code platforms — into apps that process device readings and other streaming data, into AI, and into core business record-keeping systems.

This vendor and its products have few weaknesses. Reference customers report having to code to meet their integration needs. The biggest challenge is shared by all of the leading products in this Wave: complex pricing that causes prospective customers to pause and sometimes walk away. Worse, OutSystems and the other leading vendors in this segment believe their pricing is transparent and easy for customers to understand. It isn't.

- › **Mendix, also a features pacesetter, leads in distribution partnerships.** Mendix continues to advance the state of the art in low-code platforms for AD&D. Reference customers give the Mendix platform high marks. Mendix has expanded its features to manage the continuous integration development style, manage environments and application life cycles, and automate app deployment in part to respond to the needs of its new owner, Siemens, and biggest partner, SAP.³ These, and a partnership with IBM, set Mendix apart in this market. No other low-code vendor has big-vendor relationships that open so many prospect doors.

Mendix and its product have few weaknesses. The platform lags a little in services for content management within applications. Reference customers report having to code to meet integration needs. As with the other leading platforms, predicting what Mendix platform adoption will cost can be difficult for prospects and customers.

- › **Kony has transcended its mobile-first roots but falls short on process automation.** Kony began life as a specialist in mobile application platforms before branching out into general-purpose app development and software-as-a-service (SaaS) applications. And it shows: Kony's mobile-first approach is both quick and innovative, with deep features for creating user experiences highly valued by reference customers. Support for development processes and governance is outstanding, and the platform also supports use of external tools if users prefer. And Kony has begun producing SaaS applications on its platform (starting with banking) that will open new value for customers.

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To keep pace, Kony's platform needs stronger process automation features, including content management. Kony's reference customers called out this shortfall. The vendor offers only automatic scaling, while some enterprises want to control autoscaling themselves. And its partner roster is smaller than those of other leaders.

- › **Salesforce, integrating its platforms, is still best for SFDC customers.** Salesforce's new focus on integrating its multipart platform shows results. The former Force.com declarative platform, now called the Lightning Platform, and Heroku platform-as-a-service offer many services; but in combination they remain best for customers of Salesforce's Sales and Service clouds.⁴ Strong features for data and content management, identity and access management, platform administration, and event-based apps anchor the product's value as an independent development platform. Salesforce's robust partner roster and long list of security certifications are also strengths.

Salesforce leads this market in revenue, but not in features. The Lightning Platform's process automation, mobile, and user experience tools are solid but not leading, although reference customers value the product's workflow. Customers report having to use code to meet their integration and reporting needs. The same is true for development process support and application change management: Reference customers want more than Salesforce provides.⁵ The vendor offers a single deployment target for applications, which doesn't include customer data centers.

Strong Performers

- › **ServiceNow has a strong route to market but only average functionality.** If any low-code vendor can mimic the SaaS-plus-platform formula that powered Salesforce to low-code prominence, it is ServiceNow. The vendor's IT service management solutions are widely used, making use of its platform an easy add-on for those customers. ServiceNow's investments in its platform and developer outreach have paid off with solid integration features, new mobile tools, an aggressive embrace of AI, and tools for coders, as well as identity and access management and cloud-security certifications.

ServiceNow's weaknesses relative to the leaders: too many "good not great" ratings on our functional criteria. AD&D pros will be able to deliver the most common use cases with the Now Platform — reference customers report building customer-facing apps with it, although at limited scale. We expect AI innovation from ServiceNow but not yet at pace-setting speed in this market. For many customers, that will be fine.

- › **GeneXus is the best low-code platform you've never heard of.** Customers in Japan and Latin America generally give GeneXus good marks as a rapid-app delivery vendor of 30 years' standing. The vendor recently committed to a presence in North America as well. GeneXus, like OutSystems, appeals to customers that want generated code as a hedge against vendor lock-in. The product has many strengths, particularly in data management and reporting, mobile app development, and tools for coders. On most other functional criteria, GeneXus is good, not great. Reference customers mentioned having to use code to fill integration needs.

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GeneXus' biggest weakness is its late embrace of the cloud. Customers can deploy GeneXus to the cloud of their choice, but the vendor itself does not yet offer its platform as a cloud service with its own service-level agreements and security certifications. Still, GeneXus is a solid option for clients that prefer code generation and control over platform deployment.

- › **Progress Software acquires Kinvey, a strong mobile-first product with some gaps.** Everything we understood about Progress Software's low-code platform changed when the vendor acquired Kinvey in mid-2017.⁶ Kinvey was a leading mobile back-end service; Progress has transformed it into a general-purpose low-code development platform. The new Kinvey foundation replaces Progress Rollbase and is a much stronger product, particularly for mobile apps and web user experiences. Progress has also added its integration assets to its low-code platform and offers strong identity and access management. Other areas of leadership for the platform include UX development tools, mobile application development tools, integration development tools and adapters, and AI development tools.

Progress' platform lags the leaders in process automation, content management, development process, and several other functional criteria. In data management, process automation and content management, eventing apps, development process support, deployment options, and several other criteria, the platform's features are good but not leading. In part, these assessments reflect Progress' decision to integrate with customers' existing commitments to, for example, CI/CD tooling and content management, rather than add those features to the platform itself. Reference customer feedback suggests Progress should add more of these features.

Contenders

- › **MatsSoft pivots to AD&D pros but misses some production features.** After its acquisition by Netcall, MatsSoft pivoted its focus on low-code for business developers to AD&D pros. "Mats" always had broad functionality; now it has added coding tools for developers and bulked up its management controls. The firm's expertise in and tooling for business developers make it a potential choice for clients seeking a single platform for both professional developers and business experts. Reference customers report that the product requires very little training to produce meaningful apps.

MatsSoft offers comprehensive functionality — its reference customers in particular give its process automation facilities high marks — but now must improve its support for development process management as well as better address "production" concerns: deployment options, data loading, and failure-handling procedures to keep pace with the Leaders. We expect these improvements in the second phase of Mats' pivot to AD&D.

- › **WaveMaker: a low-code platform to extend Java development and app renewal.** WaveMaker is perfect for server-side Java developers looking to low-code to make them full-stack developers. WaveMaker brings low-code tooling to web and mobile user experience development by combining declarative tooling and code behind development, allowing professional developers

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to customize and extend code. Under the covers, WaveMaker employs open standards-based frameworks — Angular7, Spring, and Hibernate — to the benefit of the many developers who know those constructs.

In our assessment method, WaveMaker's strategy to supplement Java coding with low-code tools to modernize applications is best-suited to applications where customization is needed. The vendor leaves to third parties functions that include digital process automation, content management, event-based apps, and AI, as well as performance and scaling tools and cloud security certifications. Reference customers confirm that WaveMaker is best for critical enterprise Java apps but registered lukewarm satisfaction with the platform.

- › **Thinkwise uniquely, and narrowly, focused on modernizing core business apps.** Thinkwise's sole focus: Use low-code platforms to modernize applications that manage finance, inventory, production, and other "core" business systems. Reference customers confirm the platform's value for these use cases. Thinkwise's development approach starts with a high-level model of required functions and then presents AD&D pros with tools to refine and detail the model enough to generate production applications.

Thinkwise is solid for transactional core business applications with web user experiences. The vendor is less suited for native mobile interfaces and the advanced functions in AI and event-based apps that reward the leading products in this assessment. Thinkwise's partner network is nascent. In part, Thinkwise's gaps compared to the Leaders reflect the vendor's own transformation to a products company from a services firm. We expect Thinkwise to fill these gaps during the next two years, while sticking to its mission.

Challengers

- › **Skuid is best when user experience is paramount.** Skuid continues to expand outside of its original position as a great tool for user experiences on top of Salesforce apps. Skuid now provides its deep tooling for web and mobile user experiences, including a new tool for designers, as an independent platform. The vendor's reference customers all use the platform for customer engagement, some for can't-ever-fail apps implementing sales channels or core business operations. Skuid's data management, process automation, content, and integration features serve a user experience-first development approach. The capabilities are solid, but not as extensive as vendors with deep back-end functionality.

Consider Skuid when great web and mobile experiences are paramount. The vendor's platform, including integration, will support these use cases very well.

- › **Clear Software is best when integration is the design center.** Clear Software centers application delivery on integration across multiple apps and data sources. The firm's development tooling is novel, offering a single stacked-blocks metaphor for all logic within an application. The approach is simpler than products that provide multiple design tools, each for a different aspect of a given application.

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For a full complement of development tools and services, particularly in user experience and process automation, look elsewhere. Clear Software is best for AD&D teams that integrate existing systems and databases to create new apps using common web interfaces.

Evaluation Overview

We evaluated vendors against 28 criteria, grouped into three categories:

- › **Current offering.** These 21 criteria allow us to assess the breadth and depth of each product's declarative development tools, including each platform's support for modern application development processes as well as their platform and application administration. Deploying applications to public clouds is so important to low-code development platforms that we added criteria for public cloud services and security certifications. Lastly, two criteria measure each vendor's commitments to important new technologies in AI and sensors and actuators (internet of things).
- › **Strategy.** These four criteria allow us to judge the vendor's strategy and assess its roster of partners to service enterprises; its commercial model; and its training, community, and materials programs to empower customers to help themselves with the platform.
- › **Market presence.** Three factors indicate each vendor's market presence: the raw number of customers (including enterprise customers), product revenue and growth rates, and the vendor's customer with the largest number of concurrent users in production. Revenue and growth rates are Forrester estimates.

Vendor Inclusion Criteria

Forrester included 13 vendors in the assessment: Clear Software, GeneXus, Kony, MatsSoft, Mendix, Microsoft, OutSystems, Progress Software, Salesforce, ServiceNow, Skuid, Thinkwise, and WaveMaker. To select vendors for this assessment, we tightened our inclusion criteria; the prior iteration of this Wave included Appian, AgilePoint, Bizagi, K2, and PNMSOft, vendors with strong process-automation features and focus. We now evaluate those vendors in Waves devoted to digital process automation, providing an opportunity for deeper assessment of their process features than is practicable in this Wave. Digital process automation products embrace low-code development techniques for application development.

We also included Microsoft and Netcall's MatsSoft, which we previously evaluated as low-code platforms for business developers. This change recognizes changes in those vendors' strategies, both now focused on AD&D pros as their primary audience.

Each of the 13 vendors in this Wave:

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- › **Offers a comprehensive declarative development approach.** Declarative tools allow AD&D pros to define data, logic, flows, forms, and other application artifacts without writing code. Our assessment emphasizes model-driven development and visual configuration of mobile apps; user interfaces and web pages; data; integrations; workflow and business process; content and collaboration; reporting and dashboards; security permissions; app scaling; change management; and application deployment.
- › **Designs its product/services to serve the needs and preferences of AD&D pros.** The vendors in this evaluation target professional developers as their primary customers and address other participants in development as secondary audiences.
- › **Provides a low-cost-of-entry commercial model.** Customers value low-code development platforms they can adopt at will for a very low cost — without requiring formal paid training courses to build business apps.
- › **Supports building many business use cases.** We selected vendors that take on a wide range of use cases, including web and mobile apps, transactional database apps, automated business processes, event-processing apps, and business reporting and analytical applications.
- › **Primarily targets large enterprises.** The vendors selected are capable of serving organizations that have revenues in excess of \$1 billion in several geographic regions.

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Supplemental Material

Online Resource

We publish all our Forrester Wave scores and weightings in an Excel file that provides detailed product evaluations and customizable rankings; download this tool by clicking the link at the beginning of this report on Forrester.com. We intend these scores and default weightings to serve only as a starting point and encourage readers to adapt the weightings to fit their individual needs.

The Forrester Wave Methodology

A Forrester Wave is a guide for buyers considering their purchasing options in a technology marketplace. To offer an equitable process for all participants, Forrester follows [The Forrester Wave™ Methodology Guide](#) to evaluate participating vendors.

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In our review, we conducted primary research to develop a list of vendors to consider for the evaluation. From that initial pool of vendors, we narrowed our final list based on the inclusion criteria. We then gathered details of product and strategy through a detailed questionnaire, demos and briefings, and a reference-customer survey. We used those inputs, along with the analyst's experience and expertise in the marketplace, to score vendors, using a relative rating system that compares each vendor against the others in the evaluation.

We include the Forrester Wave publishing date (quarter and year) clearly in the title of each Forrester Wave report. We evaluated the vendors participating in this Forrester Wave using materials they provided to us by November 28th, 2018 and did not allow additional information after that point. We encourage readers to evaluate how the market and vendor offerings change over time.

In accordance with [The Forrester Wave™ Vendor Review Policy](#), Forrester asks vendors to review our findings prior to publishing to check for accuracy. Vendors marked as nonparticipating vendors in the Forrester Wave graphic met our defined inclusion criteria but declined to participate in or contributed only partially to the evaluation. We score these vendors in accordance with [The Forrester Wave™ And The Forrester New Wave™ Nonparticipating And Incomplete Participation Vendor Policy](#) and publish their positioning along with those of the participating vendors.

Integrity Policy

We conduct all our research, including Forrester Wave evaluations, in accordance with the [Integrity Policy](#) posted on our website.

Endnotes

- ¹ Source: Forrester Analytics Global Business Technographics® Developer Survey, 2018. For the full results of our findings on low-code development platforms, see the Forrester report "[The State Of Low-Code Platform Adoption, 2018.](#)"
- ² Forrester both linked and refined its market segmentation for low-code development and digital process automation platforms during 2018-2019. "Now Tech: Rapid App Delivery, Q1 2019" Forrester report describes three of the four segments we now recognize: digital process automation for wide deployments, low-code development platforms for AD&D pros, and low-code development platforms for business developers. A fourth segment, digital business automation for deep deployment, will be defined in upcoming research reports. All of the dozens of vendors in our research employ the declarative tooling of low-code and can be used to deliver a variety of use cases. Forrester assigns vendors to just one of these segments to reflect that vendor's primary customer target, strongest use cases, and go-to-market approach. See the Forrester report "[Now Tech: Rapid App Delivery, Q1 2019.](#)"
- ³ Source: John Rymer, "Siemens Snaps Up Mendix; Low-Code Platforms Enter New Phase," Forrester Insights, August 2, 2018 (<https://go.forrester.com/blogs/siemens-snaps-up-mendix-low-code-platforms-enter-new-phase/>).
- ⁴ Salesforce often refers to the combination of the Lightning Platform (formerly known as Force.com) and Heroku as the Salesforce Platform.

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⁵ Salesforce provides two features for application change management. Sandboxes allow developers to create environments matching their application-lifecycle phases (develop, test, stage, deploy). Change Sets implement incremental updates to apps.

⁶ Source: “Progress Acquires Kinvey, The Leader In Backend As A Service (BaaS) Technology,” Progress Software press release, June 28, 2017 (<http://investors.progress.com/news-releases/news-release-details/progress-acquires-kinvey-leader-backend-service-baaS-technology>).

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