The Forrester Wave™: Low-Code Development Platforms For Professional Developers, Q2 2021

The 14 Providers That Matter Most And How They Stack Up

by John Bratincevic and Rob Koplowitz May 11, 2021

Why Read This Report

In our 27-criterion evaluation of providers of low-code development platforms for professional developers, we identified the 14 most significant ones — AgilePoint, Appian, GeneXus, HCL Software, Mendix, Microsoft, Oracle, OutSystems, Pegasystems, Salesforce, ServiceNow, Thinkwise Software, Unqork, and WaveMaker — and researched, analyzed, and scored them. This report shows how each provider measures up and helps software professionals select the right one for their needs.

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The 14 Providers That Matter Most And How They Stack Up

by John Bratincevic and Rob Koplowitz with Stephen Powers, Sara Sjoblom, and Kara Hartig May 11, 2021

Low-Code Is A First-Class Dev Strategy, But Now Comes The Hard Part

As the COVID crisis proved, rapid app development and constant iteration in software have become table stakes. Thus, low-code platforms are now a first-class development approach. At the same time, vendors from more specialized segments are maturing their capabilities across a wider range of use cases and developer personas — leading to a convergence in the digital process automation (DPA) and low-code markets.

Now comes the difficult necessity of platform standardization. As a result of these trends, low-code development platform customers should look for providers that:

- Elegantly address both data-centric and process-centric development patterns. Enterprise needs range from basic spreadsheet replacement to core modernization and from tactical workflows to long-running process orchestration all with solid, connected user experiences across multiple channels and a heterogeneous technology landscape. In a general-purpose low-code platform, simple projects should be easy and complex projects, efficient.
- Provide tools suitable across a range of dev personas. While this segment caters first to dedicated professional developers, vendors must still cater to some larger spectrum of employees expected to work and develop on the platform together. At a minimum, you should consider technically minded IT analysts as part of the developer pool. You may also choose to use these products for larger citizen developer initiatives. Buyers must settle on their strategy for developer personas, then pick a product that matches. While the tooling and experiences for businesspeople are not yet mature in this segment, vendors are actively investing to address the business developer persona buyers should take note of both their current tooling and (even more importantly) their future commitment to and vision for this important work pattern.
- Meet specific infrastructure, architecture, and dev process requirements. Some vendors
 can deploy virtually anywhere; others offer only a traditional platform-as-a-service (PaaS) model.
 Several vendors are established enterprise app and platform players, bringing functional synergies

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(or data gravity) to their low-code offerings, while others are independent. Some vendors provide virtually all the required tooling for modern development processes out of the box, while others focus on integrating to customers' existing DevOps toolchains; many do both. All the vendors in this assessment are largely general-purpose functionally, but buyers must ask these key questions in selecting a vendor that is the best fit.

Evaluation Summary

The Forrester Wave[™] evaluation highlights Leaders, Strong Performers, Contenders, and Challengers. 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 DPA platforms.

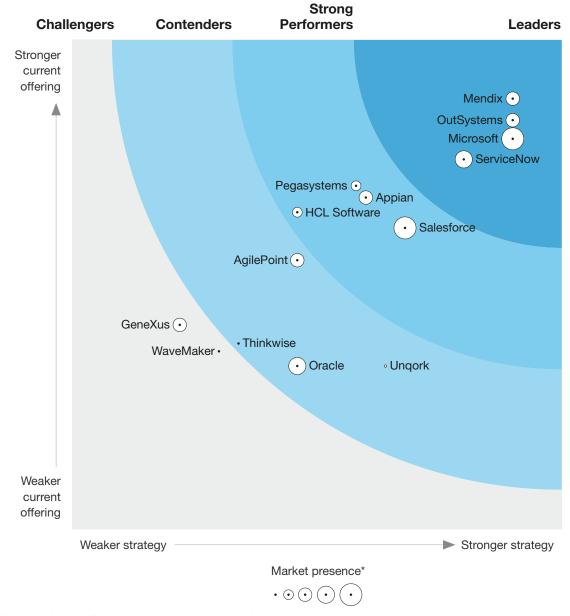
We intend this evaluation to be a starting point only and encourage clients to view product evaluations and adapt criteria weightings using the Excel-based vendor comparison tool (see Figure 1 and see Figure 2). Click the link at the beginning of this report on Forrester.com to download the tool.



FIGURE 1 Forrester Wave™: Low-Code Development Platforms For Professional Developers, Q2 2021

THE FORRESTER WAVE™

Low-Code Development Platforms For Professional Developers Q2 2021



^{*}A gray bubble indicates a nonparticipating vendor.

FIGURE 2 Forrester Wave™: Low-Code Development Platforms For Professional Developers Scorecard, Q2 2021

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	tounging	ting Adile	POLUT	on Gelde	40,	Softm	Micro	oso ^{nt} Oraci	ie outsy
Current offering	50%	2.75	3.39	2.09	3.24	4.40	3.99	1.67	4.18
Tooling for data and integrations	30%	2.00	3.00	2.00	3.00	5.00	5.00	2.00	5.00
Tooling for process automation	20%	4.30	4.40	2.00	2.90	3.30	3.60	1.60	3.30
Tooling for UX	20%	3.00	3.00	2.00	5.00	5.00	5.00	1.00	5.00
Tooling for app testing, deployment, and management	15%	2.50	4.00	2.50	3.30	4.50	1.70	2.00	3.70
Tooling for app and platform governance	10%	2.10	2.00	1.60	1.10	4.00	3.00	1.10	3.00
Reporting, extensions, and features	5%	2.10	4.20	3.10	3.00	3.20	4.20	2.80	3.20
Strategy	50%	2.30	3.00	1.10	2.30	4.50	4.50	2.30	4.50
Product vision	20%	5.00	3.00	1.00	3.00	5.00	5.00	3.00	5.00
Innovation roadmap	20%	3.00	3.00	1.00	3.00	5.00	3.00	1.00	5.00
Partner ecosystem	20%	1.00	3.00	1.00	0.00	3.00	5.00	1.00	3.00
Market approach	25%	1.00	3.00	1.00	3.00	5.00	5.00	3.00	5.00
Planned enhancements	10%	1.00	3.00	1.00	3.00	5.00	5.00	3.00	5.00
Commercial model	5%	3.00	3.00	3.00	1.00	3.00	3.00	5.00	3.00
Market presence	0%	2.50	3.00	3.00	1.50	2.50	4.50	3.50	3.00
Revenue from low-code platform sales	50%	2.00	3.00	2.00	2.00	3.00	4.00	2.00	3.00
Number of customers	50%	3.00	3.00	4.00	1.00	2.00	5.00	5.00	3.00

All scores are based on a scale of 0 (weak) to 5 (strong).

FIGURE 2 Forrester Wave™: Low-Code Development Platforms For Professional Developers Scorecard, Q2 2021 (Cont.)

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Current offering	50%	3.51	3.08	3.78	1.90	1.67	1.82	
Tooling for data and integrations	30%	2.00	4.00	5.00	2.00	1.00	1.00	
Tooling for process automation	20%	4.40	3.30	3.00	1.90	2.00	1.60	
Tooling for UX	20%	3.00	3.00	4.00	1.00	2.00	3.00	
Tooling for app testing, deployment, and management	15%	4.80	1.20	2.20	2.80	1.70	2.75	
Tooling for app and platform governance	10%	5.00	2.00	3.00	2.00	2.10	0.60	
Reporting, extensions, and features	5%	4.20	4.80	5.00	1.90	2.00	2.50	
Strategy	50%	2.90	3.40	4.00	1.70	3.20	1.50	
Product vision	20%	3.00	3.00	3.00	1.00	3.00	1.00	
Innovation roadmap	20%	3.00	3.00	3.00	3.00	3.00	1.00	
Partner ecosystem	20%	3.00	5.00	5.00	0.00	3.00	0.00	
Market approach	25%	3.00	3.00	5.00	3.00	5.00	3.00	
Planned enhancements	10%	3.00	3.00	5.00	1.00	1.00	3.00	
Commercial model	5%	1.00	3.00	1.00	1.00	1.00	1.00	
Market presence	0%	2.00	5.00	4.00	1.00	1.00	1.00	
Revenue from low-code platform sales	50%	2.00	5.00	4.00	1.00	1.00	1.00	
Number of customers	50%	2.00	5.00	4.00	1.00	1.00	1.00	

All scores are based on a scale of 0 (weak) to 5 (strong).

Vendor Offerings

Forrester included 14 vendors in this assessment: AgilePoint, Appian, GeneXus, HCL Software, Mendix, Microsoft, Oracle, OutSystems, Pegasystems, Salesforce, ServiceNow, Thinkwise, Unqork, and WaveMaker.



Vendor Profiles

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

Leaders

• Mendix is an elegant collaborative platform aimed at many personas and use cases. Mendix continues to set pace for the low-code market and credibly execute on its vision of one platform for development and collaboration between business and IT. Also, its acquisition by Siemens in 2018 has borne fruit, leading to new customer opportunities and geographical markets (such as China) as well as synergy with Siemens' broader portfolio and R&D. Its main strategic weakness: Its implementation partner network is modest, compared with its peers'.

One reference customer rightly noted that "few aspects can be improved upon" in the Mendix platform. The majority of its features are superior. Tooling for data modeling and management — particularly its data catalog — is exceptional in both features and experience. Its cloud-native credentials are also a standout with superior deployment options, compared with the other Leaders. The product's only clear functional weakness in our assessment is content management, covering only the basics of file management and storage. Mendix is an excellent choice for firms desiring a single cloud-native and -agonistic platform for a wide spectrum of low-code developer personas and projects.

OutSystems is the developers' choice — and an SI darling. OutSystems is a long-standing leader of the low-code market and brings a unique vision of turning customers into "elite software performers" on its platform — a message beyond more timid souls. Leading systems integrators (SIs) use it for pure-play low-code implementations and core application projects, and the firm enjoys significant market mindshare and credibility. OutSystems' only relative strategic weakness is as an independent player; it doesn't have the resources and/or ecosystem of the other Leaders in this assessment.

One reference customer compared OutSystems with the experience of driving a Porsche. The product has superior tools for user experience (UX) development, data modeling and management, mobile development, and development process support and collaboration — all underpinned by leading investments in Al. The platform also generates accessible code (a unique feature among the Leaders in this wave), bringing practical benefits such as the ability to scan that code with third-party testing tools. OutSystems' main weakness is its business developer tools, which are still too limited in scope, focusing primarily on prototyping or discrete app patterns like workflow. Content management is also below par, which is a weakness shared with arch-rival Mendix. OutSystems is the most prominent option for low-code core modernization while enabling the rapid development of many smaller application patterns and experiences. It's a logical fit for professional-developer-focused firms desiring a deeply featured product *and* access to the application code.



• Microsoft brings a broad toolset, clear vision, and many routes-to-market. Ubiquitous in enterprise, Microsoft's Power Apps is fast becoming a standardized low-code platform of choice. The software giant's aligned technology strategy — from Azure to Office, with Power Apps as the low-code *lingua franca* at the center — is powerful and unique. So is the firm's simultaneous commitment to the democratization of tech and the needs of professional coders in its connected stack. One reference customer described the handoff between the platform's declarative tooling and coded extensions as "elegant," and others noted that they had already built hundreds of apps with the product.

The product is comprehensive, with good features across the breadth of our assessment and several great ones. Integration capabilities are a standout, and one customer said that the product's "growing ecosystem of connectors" was helpful in automation projects. Other high points are the Excel-style Fx development language, AI features designed expressly for citizen developers, and tooling for UX and mobile development. A key weakness is the portfolio approach to adjacent Power Platform capabilities (such as Power BI) and useful Azure services (such as Azure DevOps), which must all be separately licensed and can cause confusion. Also, Power Apps is only available through a traditional PaaS model — a mismatch for customers that must deploy their apps on-premises or to another cloud provider. Microsoft is a logical fit for customers wishing to launch their pro coders and technically minded Office users together into the low-code age.

• ServiceNow has grown to a low-code platform of the first rank. Known for its IT service management solutions, ServiceNow has invested heavily in its low-code tooling and "workflow platform" messaging. It brings a strong route-to-market through its installed base and popularity among IT developers — and its burgeoning rivalry with Salesforce shows no signs of slowing down. But like other vendors in this assessment, its low-code offerings are only available through a traditional PaaS service, a weakness for customers wishing to control their own infrastructure. Also, it earns a demerit for its commercial model, which is not public or transparent.

ServiceNow's features are strong across the breadth of our assessment. Its process automation capabilities, while not best-in-class, are a clear standout and consistent with its "workflow platform" messaging. In data management, it provides many data models and a simple one-click option for extending canonical data objects through inheritance. Reference customers praised the ease with which changes can be made and propagated on the platform by nontechnical developers. ServiceNow is a strong choice for its current customers and enterprises wishing to build on the platform's IT credibility and digital workflow philosophy without committing to a full Business Process Model and Notation (BPMN)-style toolset.

Strong Performers

• Salesforce remains a solid choice for current customers but is average in most features.

The 800-pound Gorilla of the low-code world is a constant presence in strategic decisions on low-code platform standardization, and with good reason. Salesforce has support from a best-in-class



partner ecosystem (across all categories of partnerships, including its AppExchange marketplace) and brings the weighty argument of easy integration and strategic data gravity to its app portfolio customers. However, despite its market presence, the firm lags the Leaders of this Wave in features and innovation efforts — in many ways playing catch-up with competitors.

The platform itself offers superior features for reporting and analytics, coding, and integrations. Security certifications (and features aimed at the security professional) are also robust, and its tools for content are strong. Its features for testing are minimal (third parties fill the gaps), and features for app change management are mostly externalized. The firm's recent announcement on Hyperforce (for deploying data to other public clouds) is a step in the right direction but still below par for customers desiring deployment options beyond the traditional PaaS model. Most other features are on par with others in this evaluation. Salesforce is a strong choice for existing customers and those valuing the benefits of its ecosystem.

 Pegasystems excels in process and is making progress in low-code. Pegasystems has long been a dominant player in process automation, has successfully addressed some of the most sophisticated process and case management requirements in the market, and is thriving in the most demanding industries. Pegasystems has been slow to establish itself as a low-code player, but investments in its App Studio dev environment are starting to change that. Strategically, the firm is hampered by the one-dimensional nature of its commercial model: a one-size-fits-all premium per-user fee lacking a low-cost point of entry.

Its legacy in DPA creates a strong functional foundation to move into low-code with a very user-accessible process and case modeling capabilities. The platform easily handles complex processes across a wide array of best-in-class process capabilities like robotic process automation (RPA), digital decisioning, and content management, with strong support for testing, application change management, and governance. It offers a highly integrated native-cloud solution through Pega Cloud, in addition to strong support for public clouds and on-premises deployments. Pegasystems has augmented this with an elegant low-code development environment (App Studio) that is accessible even to nontechnical business developers: One reference customer noted that the product is a "great enabler" to "engage business units in the delivery journey." It better suits process-first development than data-centric applications. Customers already invested in Pegasystems should consider it for broad low-code deployment as long as the pricing structure for the use cases and number of required users is acceptable.

• Appian covers most process and low-code waterfront but is not designed for citizens. Appian put a stake in the ground in 2017 as the first company to go public as a pure-play low-code vendor. While Appian has had great success in low-code, it also offers outstanding process and case management capabilities with embedded RPA, rules, and broad content support. If your requirements include low-code development, process automation, and case management, Appian can handle all very well. It takes a very pragmatic approach to ensuring that low-code can deploy into the most sophisticated development environments including strong DevOps support, testing tools, application change management support, and reporting and analysis capabilities.



Appian is designed for rapid development for dedicated developers, and reference customers confirmed use of the platform for primarily mission-critical and business-critical systems. The most prominent developer personas are professional developers who have embraced low-code to become more responsive to business needs and technical business users who have committed to learning the tool. If your organization is looking to embrace wide-scale citizen development, the Appian learning curve will likely be an impediment. Appian has also been traditionally priced to address very sophisticated application requirements, and that may be problematic for very wide deployments. But Appian continues to introduce new pricing and packaging models to address that issue.

• HCL Software shines in UX and mobile development, playing catch-up in other areas. Temenos acquired Kony to bring low-code and world-class mobile development to its banking solutions. Temenos then exclusively licensed the Kony codebase to HCL Software to improve and market as a general-use low-code development platform in nonbanking industries. HCL has wasted no time in advancing the product, rebranding as HCL Volt MX. While still early in the R&D investment process, HCL has brought a much broader vision to a platform that already had significant advantages. Its main strategic gap: In HCL's hands, the product does not yet have a mature partner ecosystem.

The product retains its excellence in UX and mobile development, with reference customers confirming the usefulness of the development tools for multiple experiences. HCL quickly brought new assets to bear, such as a broad integration portfolio that allows Volt MX to easily connect to a large array of services and data sources. HCL has also invested heavily in new capabilities like process support, including a full modeling tool, and numerous pragmatic applications of Al. Critical tools to support citizen developers like the ability to collaborate with pro developers and application governance at scale are less mature than others in this evaluation. The low-code development tools were also not as easy to use for citizen developers as those from vendors with either more commitment to the democratized development model or more mature offerings in the space. Included testing tools are also below par. HCL best suits organizations with strong IT and technology skills and a key focus on modern front end or mobile development.

Contenders

• AgilePoint is David in a land of software Goliaths. What AgilePoint lacks in size, it looks to make up for in agility. Historically, AgilePoint is known for low-code process automation that handles a wide variety of use cases from small and situational to very sophisticated applications. Because the market demanded tools for both data-centric and process-driven applications in one platform, AgilePoint quickly pivoted and created a development environment that is easily used for either model. A reference customer also confirmed the firm's agility and said that AgilePoint is "extremely responsive and collaborative when considering requests for product enhancements." While AgilePoint moves quickly and functionally punches above its weight, it has deferred important investment in areas such as testing, developer collaboration, integrations, and security



certifications, where R&D costs can rise rapidly. Thus, this hyperagility brings a downside: In our judgement, the firm's approach to product roadmap and go-to-market are more focused and less broad than those of larger competitors with greater R&D resources.

AgilePoint does very well with digital process and dynamic case management applications. It places a premium on rapid development and developer accessibility. The product also offers strong Al support through deep integration with the large cloud platforms and excellent content management support. As confirmed by reference customers, AgilePoint provides a high ROI product and a clean developer experience. But assess AgilePoint in other areas to ensure it meets your requirements.

• Unqork is the rookie of the year. The New York startup has captured attention with its recent \$2 billion valuation and its brassy "no-code" marketing efforts. Strategically, the firm uses its internal experience and strong SI partnerships to focus almost exclusively on serving the needs of financial services, insurance, public sector, and healthcare customers. This market approach is paying strong dividends: For all its brassiness (and a whiff of hype), Unqork knows its verticals and may have disruption in its DNA. That being said, the product is only available through a private tenant PaaS model. Also, its commercial model is not public or transparent, which always gives us pause.

The product is less mature than others in this assessment. Nevertheless, Unqork's zeal for "nocode" is borne out in its tooling, and the product is improving rapidly. CSS is as close to code as the platform gets; scripting or coded customizations are not permitted. The development tooling is process-modeling-centric, and data transformation and manipulation are performed through a deep configurator. An unusually high number of styling options are provided for UI design. Key weaknesses: The product is obtuse for a data-modeling-first development approach, has no options for native mobile apps, and relies on third-party integrations for many on-par features in this assessment (AI, content, testing, etc.) without a large ecosystem of prebuilt connectors. We expect great things from this young company, but at this point, firms in its focus verticals or that aggressively buy into its no-code philosophy should primarily consider Unqork. Unqork declined to participate in the full Forrester Wave evaluation process.

• Oracle brings a leading commercial model and enterprise credibility but shows its age. The technology giant has been slow to take advantage of the modern low-code movement. It fields two low-code products, which muddles the strategic waters: APEX (evaluated in this report) lags in modern features but has a large developer following, and Visual Builder (not evaluated in this report) is a more modern product but positioned and used primarily for extending Oracle software-as-a-service apps. Oracle's strategic saving grace: Its aggressive APEX cloud commercial model, which starts at a nominal cost, does not charge for developers or app users and scales charges beyond the starting package based on a small list of resource levers. Reference customers also noted their long-standing trust in the Oracle brand.

APEX is a database builder at heart, relies heavily on PL/SQL, and is complemented by Java and JavaScript for business logic. As such, it is more in the realm of medium-code, compared with the tooling of competitors, as customer references confirm. Coding is required for a full range of on-



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par UX or mobile features beyond responsive web apps. It provides no native features for process modeling (relying on third-party add-ons), few testing features (again relying on third parties), and little in the way of developer collaboration or native app change management tools. Several of these gaps are slated to be addressed in its product roadmap. At this point, APEX is primarily a fit for current Oracle customers heavily focused on the database or firms prizing a simple and scalable commercial model above all else.

• Thinkwise focuses entirely on core applications — an impressive but challenging niche. This small firm has a bold and unique strategy: focus entirely on bringing agile flexibility to large core applications, turning the long tail of many small apps into a shorter list of extremely large apps developed by a central team on a master blueprint. This is a valuable, but difficult, subsegment: Many large enterprises aren't ready to embrace bespoke low-code core applications, especially with a small vendor. Also, the firm does not practice detailed long-term product planning, which is puzzling for a firm so methodical.

The product's features for data modeling and management, application change management, and testing are all solidly on par. Tooling for process automation and integration are lacking; reference customers also noted some dissatisfaction with mobile development. The platform's outstanding features are unique to its niche and not captured in our scoring rubric: for example, a massive scale up-cycler for app portfolios that extracts data models and business logic from mature tech (such as Microsoft Access or competitor Uniface) and automatically translates them into the platform. Firms that wish to modernize large core systems and take advantage of the adaptability that low-code offers should consider Thinkwise.

Challengers

• WaveMaker is laser focused on professional Java developers only. WaveMaker operates primarily in key verticals of banking and insurance, telecom, and healthcare and specializes particularly in serving the needs of independent software vendors. The platform is built on open standards, focuses on one primary persona (Java developers), and relies heavily on integrating with best-of-breed pro development tools for functions such as developer collaboration and testing. The commercial model matches this sharp focus and is based on developer seats. This approach has led to rapid recent growth for the firm, but it limits the product's long-term potential in this market and cedes the benefits of platform synergy and modern working patterns (such as citizen development and teams of less technical personas) to other players.

The product's merits match its strategy: The architecture is cloud-native and API-driven, is superior in deployment options, and provides full access for a code-behind approach throughout the tooling. Its tooling for UX and mobile development are solid. Its key weaknesses are its lack of business developer tools and its reliance on third-party integrations for on-par features across the breadth of process automation. There are also points of friction in its data modeling tools, which required code for certain simple tasks in our demo scenario that other products didn't. Customer



references, while pleased with WaveMaker as a business partner, also noted a higher ratio of code required to complete projects, compared with other vendors in this assessment. WaveMaker is a logical fit for Java shops wanting a cloud-native low-code development platform to extend their capacity and integrate with their existing tools; those wanting a product to have everything natively in the box or to enable business developers should look elsewhere.

• GeneXus brings a unique and strategic architecture but a dated developer experience. GeneXus, a 32-year-old firm, was an early visionary in declarative development. The platform's architecture is unique, allowing developers to select from a long (and changing) list of front-end and back-end languages, which can be generated from the platform tooling, ranging from legacy languages like COBOL to modern standards like Java. Reference customers use the product for data-heavy enterprisewide use cases such as enterprise resource planning and banking systems. Unfortunately, the firm accepts the low-code label only grudgingly and rejects the no-code ideal entirely — a contrarian message and questionable strategy in this market. This view is also reflected in the firm's product roadmap, which focuses less on no-code dev evolution and more on functional edge cases.

The GeneXus platform's unique architecture as a seemingly future-proof code generator is its key technical and strategic strength. Its development tools are wide-ranging, including full provision for BPMN — unusual among platforms not originating in DPA. Also, its ability to import Sketch designs into the UI builder is a benefit for design teams. Unfortunately, across the board, developers are presented with a dated medium-code-style experience. Many tasks done easily and elegantly in other products (through visual tools or the click of an obvious button) required some review, writing, or manipulation of syntax or antiquated menus in GeneXus. Firms attracted to GeneXus' architecture, its developer-based pricing, and its street cred for producing massive mission-critical systems should consider the product — but only when the target audience is dedicated teams of professional developers who want direct access to the generated code and won't be put off by the integrated development environment.

Evaluation Overview

We evaluated vendors against 27 criteria, which we grouped into three high-level categories:

- **Current offering.** Each vendor's position on the vertical axis of the Forrester Wave graphic indicates the strength of its current offering. Key criteria for these solutions include data modeling and management tools, integration dev tools and adapters, process design and maintaining state, UX and development tools, and tools for business developers.
- **Strategy.** Placement on the horizontal axis indicates the strength of the vendors' strategies. We evaluated product vision, innovation roadmap, partner ecosystem, market approach, and planned enhancements.



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• **Market presence.** Represented by the size of the markers on the graphic, our market presence scores reflect each vendor's revenue from low-code platform sales and number of customers.

Vendor Inclusion Criteria

Forrester included 14 vendors in the assessment: AgilePoint, Appian, GeneXus, HCL Software, Mendix, Microsoft, Oracle, OutSystems, Pegasystems, Salesforce, ServiceNow, Thinkwise, Unqork, and WaveMaker. Each of these vendors has:

- Comprehensive declarative tooling capable of delivering a wide variety of business use cases.
- Development experiences designed to serve the needs and preferences of software professionals.
- Primary targets of large enterprises.
- Interest among Forrester clients based on client inquiries, exceptional customer case studies, unique features and architecture, or market position.

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Gain greater confidence in your decisions by working with Forrester thought leaders to apply our research to your specific business and technology initiatives.

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To help you put research into practice, connect with an analyst to discuss your questions in a 30-minute phone session — or opt for a response via email.

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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.

In our review, we conduct primary research to develop a list of vendors to consider for the evaluation. From that initial pool of vendors, we narrow our final list based on the inclusion criteria. We then gather details of product and strategy through a detailed questionnaire, demos/briefings, and customer reference surveys/interviews. We use 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 January 2021 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[™] and New 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.

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



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