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The Forrester Wave™: Platform-As-A-Service For App Dev And Delivery Professionals, Q2 2011

by John R. Rymer and Stefan Ried, Ph.D.

for Application Development & Delivery Professionals

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Microsoft And Salesforce.com Lead, With Cordys, LongJump, Caspio, And WorkXpress Close Behind

by **John R. Rymer and Stefan Ried, Ph.D.**

with Mike Gilpin, Andrew Magarie, and Alissa Anderson

EXECUTIVE SUMMARY

In Forrester's 149-criteria evaluation of 10 platform-as-a-service (PaaS) vendors, we found that Microsoft and salesforce.com led the pack because of their comprehensive features for application development and delivery pros and strong strategies in the category. Cordys, LongJump, Caspio, WorkXpress, WaveMaker, and Google were the next-strongest vendors (in order) in our analysis, followed by OrangeScape and Tibco Software. Our analysis shows which PaaS vendors are best for professional developers and which are best for business developers. Our analysis also reveals a very immature market with lots of potential risks for buyers.

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NOTES & RESOURCES

Forrester conducted lab-based evaluations in July and August 2010 with 10 vendor companies: Caspio, Cordys, Google, LongJump, Microsoft, OrangeScape, salesforce.com, Tibco Software, WaveMaker, and WorkXpress. We did update interviews during January 2011. Forrester interviewed 22 customers under condition of anonymity.

Related Research Documents

["Forrester Wave™: Platform-As-A-Service For Vendor Strategy Professionals, Q2 2011"](#)
May 19, 2011

["Cloud Computing Brings Demand For Elastic Application Platforms"](#)
April 26, 2011

["Platform-As-A-Service Is Here: How To Sift Through The Options"](#)
April 1, 2009

["Forrester's Platform-As-A-Service Reference Architecture"](#)
February 20, 2009

PAAS: THE KEY TO UNLOCK CLOUD COMPUTING'S POWER

Cloud computing is exciting for application development and delivery pros because it offers instant access to resources for development and testing; deployment in minutes; easy, even automatic, scaling up and down; and pay-for-what-you-use pricing. But if application development and delivery pros are to get all the benefits of cloud computing, they need strong platform-as-a-service products to use.¹ This is particularly true for public clouds.

Why? Building cloud apps can recall the bad old days of native Unix and sockets programming if you develop to infrastructure-as-a-service (IaaS) solutions like Amazon EC2 and S3. You have to worry about the details of virtual machines, storage blocks, execution threads, and network connections. Yikes!

This is why platform-as-a-service (PaaS) is so important. With good PaaS products application development and delivery pros will quickly gain cloud's benefits. Without good PaaS products, cloud development is simply too difficult for most enterprise developers, and the benefits of cloud will flow slowly, if at all, to a broad range of shops.

PaaS Defined

Forrester defines platform-as-a-service as:

A complete application platform for multitenant cloud environments that includes development tools, runtime, and administration and management tools and services. PaaS combines an application platform with managed cloud infrastructure services.

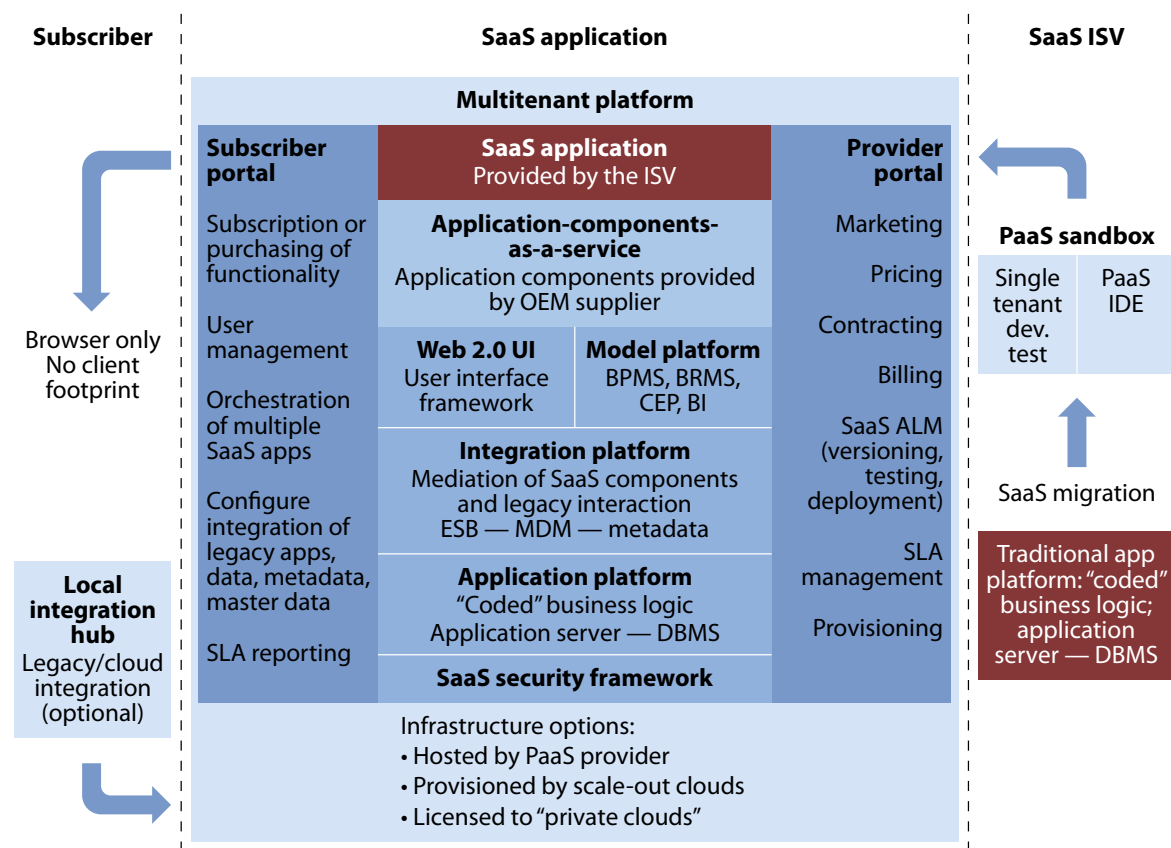
Forrester's platform-as-a-service reference architecture outlines the major services a comprehensive PaaS provides (see Figure 1). For application development and delivery pros and their teams, PaaS provides three crucial services and tools:

1. **Frameworks, services, and tools of modern application platforms.** With great PaaS products, developers build using application services and tools that hide the underlying platform details and allow us to focus on the business problems we're solving. Development teams don't have to become cloud infrastructure specialists to build and deploy cloud applications.
2. **Frameworks for the unique opportunities of cloud infrastructure.** The three big challenges for most application development and delivery pros are: 1) how to build applications that can automatically scale up and down on elastic infrastructure; 2) how to create and manage individual applications shared by many organizations (multitenant applications); and 3) how to integrate applications in the public cloud with other public-cloud applications and with applications running in our data centers (on-premises applications).

3. Innovative tools for both pros and business developers. Like all previous generations of development platforms, PaaS carries new productivity ideas. PaaS' productivity contributions are primarily tools to empower business experts to deliver applications.

Forrester's reference architecture also defines services important to application development and delivery teams delivering customer-facing software such as for marketing or billing, independent software vendors (ISVs), and systems integrators. For an analysis of how the PaaS market satisfies the additional requirements of ISVs and systems integrators, see "Forrester Wave™: Platform-As-A-Service For Vendor Strategy Professionals, Q2 2011."²

Figure 1 Forrester's Platform-As-A-Service Reference Architecture



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Source: Forrester Research, Inc.

A FRAGMENTED PAAS LANDSCAPE AND AN IMMATURE MARKET

The PaaS market is a sprawling, fast-changing, and immature market. Most PaaS vendors are small, and even big vendors like Google and Microsoft have incomplete, new products. Salesforce.com has the most mature PaaS, but it just acquired an entirely new PaaS product (Heroku), and its fit into the portfolio and strategy isn't yet clear.

Developers vote with their dollars and energy, and both our data and continuing conversations with clients suggest they are not yet voting for PaaS products in significant numbers.³ Google App Engine (GAE), Microsoft Windows Azure, and salesforce.com's Force.com get attention and adoption, but most developers prefer either to work with infrastructure-as-a-service options led by Amazon Web Services or to postpone development in the cloud. Forrester expects developers to shift to PaaS as the available options improve.

The PaaS market's immaturity is also evident in the relatively low scores registered by many of the vendors in our Wave analyses. Whereas many Forrester Waves have four or more Leaders, ours only has two.

Lastly, the fact that major platform vendors have only recently entered the PaaS market contributes to its immaturity. IBM, Red Hat (JBoss), and VMware each only entered the PaaS market during the spring of 2011, as this report was finalized. Oracle has a very small "private PaaS" initiative, and SAP isn't yet in the market.

The Four Major PaaS Categories

Part of the problem customers have with the PaaS choices is the lack of a clear definition for the category. Dozens of vendors call their products "PaaS," despite huge industry disagreements about the definition of a PaaS.

Forrester has identified four major categories of products that we label as PaaS (see Figure 2):

- **Integrated development environment (IDE) with cloud deployment is a hybrid approach.** The largest category of PaaS products seeks to introduce cloud deployment without changing familiar development environments. The idea is that developers working in Eclipse or Visual Studio will work as they always have, but when deploying, they provide the additional information needed to deploy their applications into a cloud. Developers create code on their local machines but deploy it to a remote cloud data center.
- **Cloud IDEs place all development in the cloud.** In contrast, cloud IDEs offer browser-based development environments aimed at coders who execute in a cloud data center. Developers code in a remote cloud data center via browsers and deploy to that cloud data center as well. The cloud IDEs are similar in function but not the same as familiar Eclipse-based IDEs and Visual Studio.

- **PaaS for business experts provides powerful new approaches.** Several of the PaaS options target business experts, not “coders.”⁴ They do so with innovative and powerful new tools for creating applications without coding. Some application development and delivery pros will find these products attractive alternatives to IDEs because they speed delivery of new applications.
- **IDE-neutral cloud runtime solves half the development problem.** Some products labeled as PaaS don’t provide development tools at all. Rather, these products provide a platform to manage deployment of applications into cloud data centers, and the ongoing scaling and management of those applications. Developers can use the development tools of their choice within the constraints set by the environment. The biggest constraint: Most of these PaaS products today support only one programming language. These products don’t fit Forrester’s definition of PaaS (which requires the vendor to provide a complete platform) but play an important role in emerging elastic application platforms.

Figure 2 Four Categories Of PaaS Products

<p>IDE with cloud deployment</p> <ul style="list-style-type: none"> • Appian • Google • LongJump • Magic Software • Microsoft • NetSuite • OutSystems • salesforce.com • Servoy • Tibco Software • Vaakya • VMware • WaveMaker • WSO2 	<p>IDE-neutral cloud runtime</p> <ul style="list-style-type: none"> • Amazon • Appistry • Apprenda • CloudBees • Cloudsoft • Engine Yard • GigaSpaces • Heroku • Joyent • Microsoft • Red Hat • techcello.com • VMware
<p>Cloud IDE</p> <ul style="list-style-type: none"> • Appian • Cordys • Intuit • salesforce.com • TrackVia • WOLF Frameworks 	<p>PaaS for business experts</p> <ul style="list-style-type: none"> • Caspio • Cordys • IS Tools • OrangeScape • WorkXpress • Zoho

PLATFORM-AS-A-SERVICE EVALUATION OVERVIEW

To assess the state of the PaaS market and see how the vendors stack up against each other, Forrester evaluated the strengths and weaknesses of top PaaS vendors. We initially selected 11 vendors because:

- Each corresponded to our PaaS definition, including providing a hosting approach for production deployment.
- Each had a product generally available to customers as of May 30, 2010, when this research began.
- The collection of vendors represented the most important choices in the market for enterprise application development and delivery pros.

The final list of 10 vendors and the products we evaluated is shown below (see Figure 3).⁵

Figure 3 Evaluated Vendors: Product Information And Selection Criteria

Vendor	Product(s) evaluated	Product version(s) evaluated	Version release date(s)
Caspio	Caspio Bridge	6.95	December 2010
Cordys	Cordys Process Factory (CPF)*	5.0	December 2010
	Cordys Cloud Provisioning (CCP)*	4.0	January 2010
Google	Google App Engine (GAE)	1.4.0	December 2010
LongJump	LongJump	7.1	September 2010
Microsoft	Windows Azure		November 2010
OrangeScape	OrangeScape	R3.0.x	December 2010
salesforce.com	Force.com		December 2010
Tibco Software	Tibco Silver Product Suite:		
	Tibco DataSynapse FabricServer	3.0.2	August 2009
	Tibco DataSynapse Federator	2.0	January 2010
	Tibco Silver CAP (Composite Application platform)	1.0	May 2010
	Tibco Silver BPM	1.0	May 2010
	Silver BW	1.0	December 2010
	Silver MFT	1.0	December 2010
	Tibco Silver Spotfire	1.0	December 2010
WaveMaker	WaveMaker	6.2.5	December 2010
WorkXpress	WorkXpress	2.4	December 2010

Vendor selection criteria

Vendors corresponded to our PaaS definition, including providing a hosting approach for production deployment.

Vendors had a product generally available to customers as of May 30, 2010, when this research began.

Vendors represented the most important choices in the market for enterprise application development and delivery pros.

*Based on Cordys Business Operations Platform (BOP-4, June 2009)

Source: Forrester Research, Inc.

Our Evaluation Criteria Provide A Comprehensive View

After examining past research, user need assessments, and vendor and expert interviews, we developed a comprehensive set of evaluation criteria. We evaluated vendors against 149 criteria, which we grouped into three high-level buckets:

- **Current offering.** The current offering criteria measure the features provided by the vendor within its PaaS, addressing architecture, performance and scaling features, application development tools and services, administration and management facilities, cloud connectivity services, standards and interoperability features, and ISV features. Current offering scores are depicted on the vertical axis of the Forrester Wave diagram. The evaluation's current offering scores do not measure either product performance or stability and should not be used as a proxy for benchmark tests.

Our scoring emphasizes features to enable PaaS in the public cloud, and this put Tibco Software at a distinct disadvantage in our evaluations. With its Silver portfolio, Tibco is primarily addressing internal, or private, clouds. Proper evaluation of internal cloud offerings awaits further research.⁶

- **Strategy.** The strategy criteria assess the vendor's product road map and corporate strategy, as well as licensing and support options available for its product. Forrester's assessments of product and corporate strategy are subjective; the other scores are based on data. Strategy scores are depicted on the horizontal axis of the Forrester Wave diagram.

Forrester eliminated pricing and cost criteria for this Wave, as the range of vendor capabilities diverged too much to make comparisons meaningful. All of the vendors except Tibco publish their prices on their websites, and so prices are transparent.

- **Market presence.** The market presence criteria include the size of the vendor's employee and customer bases as well as its sales force and other channels. Market presence scores determine the size of the circle surrounding each vendor's dot on the Forrester Wave diagram. The evaluation's market presence scores do not measure market share and should not be used as a proxy for such estimates.

OUR EVALUATION REVEALS SALESFORCE.COM LEADING WITH MICROSOFT ACCELERATING

To evaluate the PaaS market, we segmented the vendors into two groups — those that focus on traditional application development and delivery professionals and those that focus on business developers, eschewing app developers. Several of the vendors target both types of customers, and so are included in both customer-segment analyses (see Figure 4).

Figure 4 PaaS Vendors By Customer Segment

Coders	Business experts
<ul style="list-style-type: none">• Cordys• Google• LongJump• Microsoft• salesforce.com• Tibco Software• WaveMaker	<ul style="list-style-type: none">• Caspio• Cordys• OrangeScape• salesforce.com• WaveMaker• WorkXpress

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Source: Forrester Research, Inc.

In PaaS For Coders, Microsoft And Salesforce.com Lead The Pack

Our evaluation of PaaS products for professional developers (“coders”) uncovered a market in which salesforce.com — one of the PaaS pioneers — has built a powerful product, market position, and strategy and in which Microsoft has quickly also built a leading position (see Figure 5). The Leaders each have comprehensive feature sets and strong strategies, but there are strong alternatives for developers as well.

- **Microsoft and salesforce.com lead the pack in PaaS for coders.** Both companies offer developers strong application development tools, including facilities for quality assurance, as well as strong features in scaling, administration and management, and core architecture. Microsoft’s Windows Azure registered the strongest features by virtue of its lead in our scalability and performance management, application development tools, and standards and interoperability categories. Still, Force.com has very strong features, and salesforce.com’s strategy is stronger than Microsoft’s — primarily reflecting its long history in this market. Microsoft is a relative newcomer by comparison.

Our only concern about salesforce.com’s strategy is the potential for its recent acquisition of Heroku to cause confusion and complexity. Heroku is aimed at a large new audience — web developers using Ruby — and is implemented on top of Amazon Web Services (salesforce.com has made no commitment to implement it on its own cloud). The acquisition may work out — Heroku has strong market momentum — but there are many execution risks.

- **Cordys and LongJump are the leading Strong Performers in PaaS for coders.** A considerable gap separates the Leaders in this category from the Strong Performers. Cordys, a vendor based in the Netherlands, and LongJump are the strongest of the Strong Performers. Both companies came out of enterprise application vendors, Cordys from Baan and LongJump from Relational Networks. Cordys and LongJump both offer feature sets on a par with those of salesforce.com’s

Force.com but fall off the pace due to weaker strategy scores. Both companies trail the Leaders in financial strength and in partner strategies as well. And both Cordys and LongJump partner for their public cloud data centers, while the Leaders run their own and thus have more control over reliability.

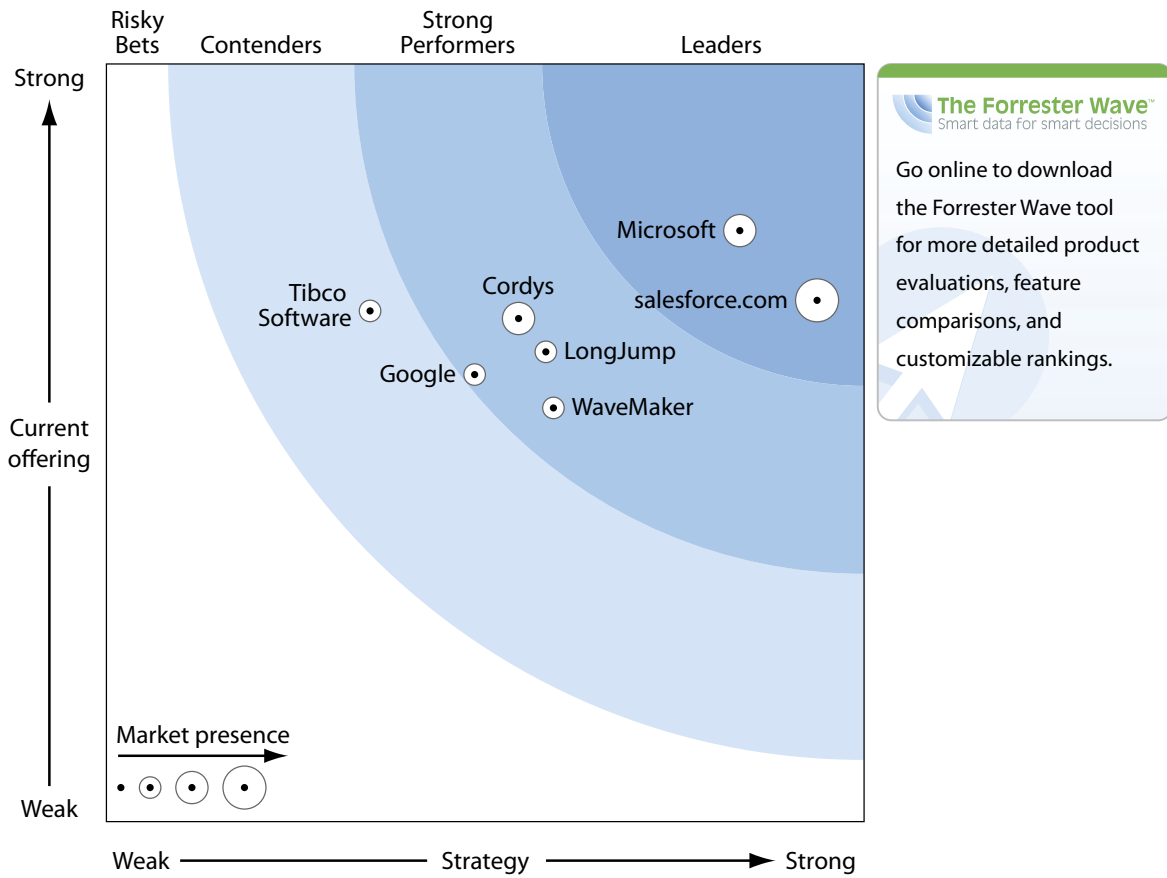
- **Google and WaveMaker are also Strong Performers.** Google receives an enormous amount of attention for everything it does, including its Google App Engine. Our analysis reveals the product to have some feature deficiencies compared to the other products in this category and serious strategy weaknesses. Google's scores for features suffered primarily because it relies so heavily on developers to bring their own frameworks, application services, and tools to create a full application platform. Google's strategy scores suffered from a relatively weak product road map, partner strategy, and lack of uptime transparency.

WaveMaker was recently acquired by VMware and will soon become part of the SpringSource portfolio of middleware and tools. WaveMaker's current-offering scores were lower simply because its focus is limited. WaveMaker does not intend to offer a comprehensive environment; its goal is to provide powerful tools for database applications in the cloud. Thus, the company will play a vital role inside of VMware's growing middleware portfolio.

- **Tibco Silver is a Contender in PaaS for coders.** As noted, Tibco's primary goal is to sell software for internal clouds, not to provide public cloud development services. Tibco's Silver portfolio is strong in application services and, as might be expected, has sophisticated integration features. Tibco has just begun to offer its portfolio as public cloud services during the past year (on Amazon EC2), and we suspect that as the company further develops and integrates its product line, its position in this market will rapidly improve. We also expect Tibco to be a pioneer in elastic application platforms.

This evaluation of the PaaS market is intended to be a starting point only. We encourage readers to view detailed product evaluations and adapt the criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool.

Figure 5 Forrester Wave™: Platform-As-A-Service For Coders, Q2'11



Source: Forrester Research, Inc.

Figure 5 Forrester Wave™: Platform-As-A-Service For Coders, Q2'11 (Cont.)

	Forrester's Weighting	Cordys	Google	LongJump	Microsoft	salesforce.com	Tibco Software	WaveMaker
CURRENT OFFERING	50%	3.32	2.95	3.10	3.90	3.44	3.37	2.73
Architecture	20%	3.20	2.56	3.62	3.42	4.22	2.10	2.28
Performance and reliability	20%	3.00	4.00	3.50	4.75	3.50	3.50	2.75
Application development	20%	4.16	3.57	3.85	4.53	2.97	3.52	3.44
Administration and management	20%	4.00	3.00	2.75	3.50	4.25	3.38	3.25
ISV services	0%	3.30	1.60	3.80	1.90	4.10	0.60	1.80
Cloud connectivity	10%	3.25	1.15	1.80	3.30	2.30	4.15	2.05
Standards and interoperability	10%	1.18	2.13	1.77	3.30	2.22	4.52	1.79
STRATEGY	50%	2.72	2.43	2.90	4.18	4.69	1.74	2.95
Product strategy	25%	2.25	2.30	3.70	3.60	5.00	1.35	2.35
Partner strategy	20%	1.80	0.20	2.40	4.20	5.00	0.60	2.60
Corporate strategy	25%	3.60	2.70	3.80	4.36	4.60	1.71	3.54
Financial strength	30%	3.00	3.80	1.80	4.50	4.30	2.85	3.20
Go-to-market model	0%	4.25	1.75	3.75	2.25	2.75	1.00	3.50
MARKET PRESENCE	0%	3.03	2.23	2.85	3.83	4.55	2.80	2.33
Current usage	25%	1.60	1.90	1.90	2.80	4.70	0.70	0.30
Services	25%	4.00	2.00	4.00	5.00	5.00	4.00	4.00
Employees	25%	3.50	5.00	2.00	5.00	4.50	4.50	2.50
Distribution channels	25%	3.00	0.00	3.50	2.50	4.00	2.00	2.50

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

Source: Forrester Research, Inc.

Salesforce.com Also Leads In PaaS For Business Experts, But Innovators Challenge

Our evaluation of PaaS products for business developers (“business experts”) uncovered a market in which salesforce.com is the only Leader (see Figure 6). But upstart vendors — most notably Caspio and WorkXpress — provide very strong alternatives. Microsoft does not appear in this analysis because it does not yet offer tools for business experts in its Azure product line.

- **Salesforce.com leads in PaaS for business experts.** Force.com contains tools for business experts as well as tools for professional developers, and those tools are strong and mature. Salesforce.com remains committed to building up this set of capabilities. Combine strong business-expert tools with strong features overall, and that’s why salesforce.com is the Leader.

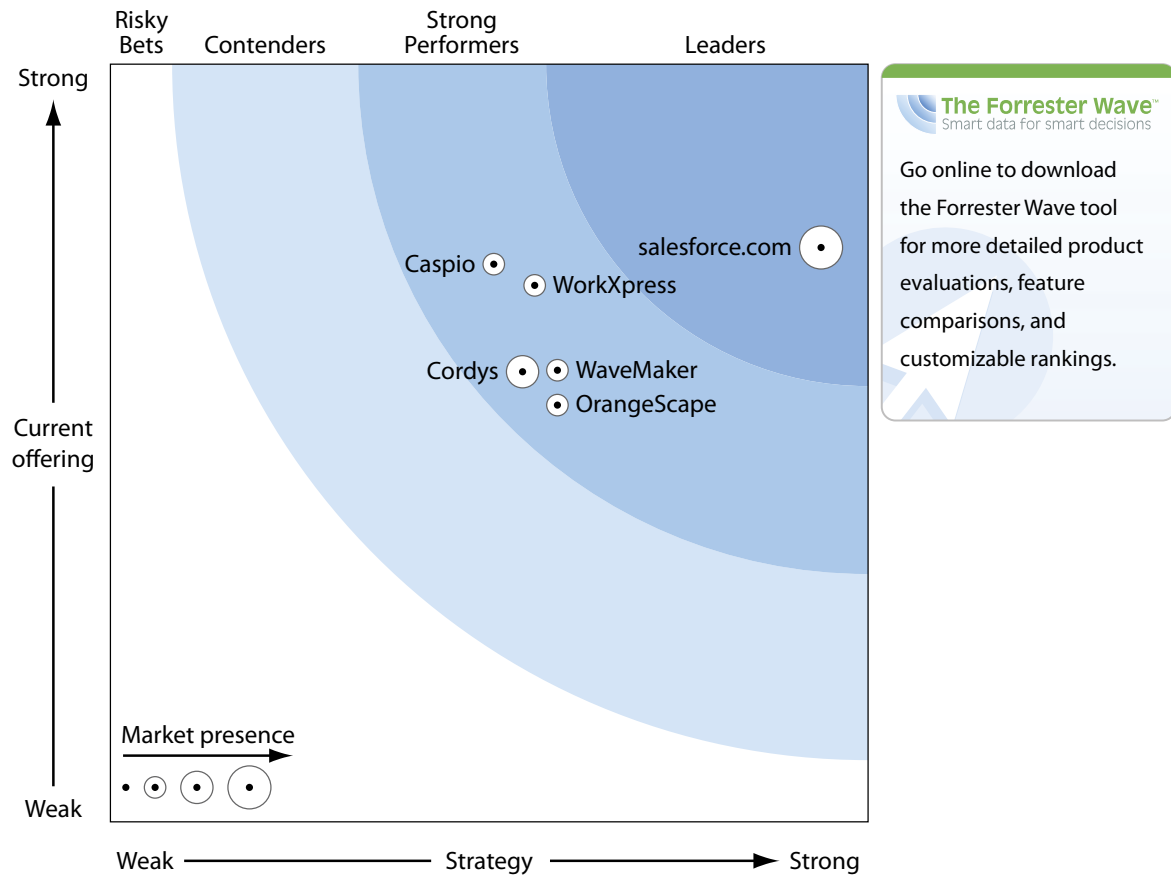
- **Caspio and WorkXpress are a new breed — and Strong Performers in this category.** Caspio and WorkXpress have built platforms exclusively to empower business experts. Both vendors offer innovative tooling — particularly WorkXpress — and dramatically simplified environments for delivering applications. The reference customers for both vendors were not professional developers, but rather businesspeople. Both Caspio and WorkXpress registered feature scores on par with Force.com's scores in this category. Both vendors fell off the pace because of the weaker strategy scores typical of new vendors. In particular, both vendors have nascent partner strategies.

- **Cordys, WaveMaker, and OrangeScape are Strong Performers as well.** Both Cordys and WaveMaker also target business experts with their products, although it is a bit of stretch for both vendors to do so. Thus, their features scores fall off the pace set by salesforce.com, Caspio, and WorkXpress.

OrangeScape is another “new breed” platform vendor, based in India. Like Caspio and WorkXpress, OrangeScape has invented a powerful approach to empower business experts to deliver applications. OrangeScape falls short in scalability and performance management tools and support of the standards and interoperability mechanisms we selected. But its scores for architecture and tooling are very strong. OrangeScape's strategy scores suffer from small-company risks and a nascent partner program.

This evaluation of the PaaS market is intended to be a starting point only. We encourage readers to view detailed product evaluations and adapt the criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool.

Figure 6 Forrester Wave™: Platform-As-A-Service For Business Experts, Q2 '11



Source: Forrester Research, Inc.

Figure 6 Forrester Wave™: Platform-As-A-Service For Business Experts, Q2'11 (Cont.)

	Forrester's Weighting	Caspio	Cordys	OrangeScape	salesforce.com	WaveMaker	WorkXpress
CURRENT OFFERING	50%	3.68	2.97	2.75	3.79	2.98	3.54
Architecture	10%	3.16	3.33	3.74	4.19	2.73	3.16
Performance and reliability	20%	3.60	3.40	2.00	3.60	2.20	4.00
Application development	40%	4.78	2.32	3.84	4.06	3.23	3.86
Administration and management	20%	3.55	4.35	2.02	4.78	3.74	4.33
ISV services	0%	1.00	3.30	0.50	4.10	1.80	4.10
Cloud connectivity	0%	1.56	3.95	0.99	3.38	1.63	3.51
Standards and interoperability	10%	0.18	1.58	0.36	0.72	2.25	0.18
STRATEGY	50%	2.53	2.72	2.95	4.69	2.95	2.80
Product strategy	25%	1.85	2.25	2.35	5.00	2.35	4.50
Partner strategy	20%	0.40	1.80	2.60	5.00	2.60	1.00
Corporate strategy	25%	4.65	3.60	3.54	4.60	3.54	3.50
Financial strength	30%	2.75	3.00	3.20	4.30	3.20	2.00
Go-to-market model	0%	2.00	4.25	2.25	2.75	3.50	4.25
MARKET PRESENCE	0%	2.33	3.03	2.03	4.55	2.33	2.25
Current usage	25%	0.30	1.60	2.10	4.70	0.30	2.00
Services	25%	4.00	4.00	2.00	5.00	4.00	4.00
Employees	25%	2.50	3.50	2.00	4.50	2.50	2.00
Distribution channels	25%	2.50	3.00	2.00	4.00	2.50	1.00

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

Source: Forrester Research, Inc.

VENDOR PROFILES

Leaders: A Cloud Powerhouse And A Software Goliath

- **Salesforce.com.** Salesforce.com helped to create the PaaS category, having begun by exposing the platform underlying its customer relationship management SaaS product years ago. Despite its success as a SaaS vendor, salesforce.com executives like to say they run an application platform company. Salesforce.com's aggressive investments to expand its Force.com portfolio certainly support that notion, as do the additional platform products salesforce.com added during late 2010 and the Heroku acquisition. Forrester estimates that salesforce.com has more than 10,000 accounts using Force.com as a development platform (as opposed to using it for extending the salesforce.com applications), perhaps as many as 25,000. Salesforce.com markets the Force.com portfolio through its own field force, but hundreds of partners also promote and extend the platform.

- **Microsoft.** Microsoft got into the PaaS game relatively late — years after salesforce.com. PaaS is doubly difficult for Microsoft to embrace: It involves not only new technology but also a dramatic change in business model. Microsoft's progress is impressive; the company reports having 31,000 customers for its Azure platform. Microsoft's partnering efforts are just beginning to kick in, as only about 100 of its enormous partner roster have committed to Azure.

Strong Performers And Contenders: Startups, Upstarts, And Restarts

- **WorkXpress.** You've probably not heard of WorkXpress, and definitely not seen anything like it either. The company began life as a solutions house, hiring out to create applications. The WorkXpress platform resulted from the observation that "there has to be a better way to create solutions." WorkXpress is designed to let business experts create very sophisticated applications. One of the company's reference customers was the operations leader for a small manufacturer who had built an enterprise resource planning (ERP) system for his employer while doing his "day job." WorkXpress sells directly to mostly small enterprises, reports having between 500 and 1,000 accounts, and has only recently begun to build ISV partnerships.
- **Caspio.** Caspio is the PaaS pioneer you've probably never heard of. The company was founded in 2000 and has customers in 40 countries and 2,500 accounts in total. You've not encountered Caspio because the company focuses on businesspeople, not developers and not ISVs. Caspio's reference customers validated this claim: They were businesspeople, not developers. Caspio is best known for creating interactive, database-driven web applications easily. Caspio has sold direct through its web presence and word of mouth, but in 2011, it will begin developing a partner strategy as well.
- **WaveMaker.** Think of WaveMaker as the PowerBuilder of PaaS. The company's clever strategy was to double down on an innovative tool for creating database applications in Java and supplement that tool with open source Java frameworks to create broader platforms. The result: A nice liftoff in the market, followed by acquisition by VMware. WaveMaker reports having more than 7,000 accounts, and in its short tenure as an independent company, it had signed up between 10 and 20 commercial ISVs.
- **OrangeScape.** One way to look at OrangeScape: It fills the gap in Google's strategy for PaaS aimed at business experts. OrangeScape runs on top of Google's cloud infrastructure and so coexists with GAE. OrangeScape also hopes soon to fill the same role on Windows Azure. OrangeScape's innovation is its sophisticated spreadsheet-like tool for building application models. The company is just getting started, with about 50 accounts and about 30,000 seats. OrangeScape has a nascent partner program.
- **Cordys.** Cordys is the successor company to Baan, once a strong contender in ERP software. Cordys' primary strategy is to spread its technology through partnerships with ISVs and service providers, and it has built notable features to support that strategy.⁷ Cordys' partnership efforts

are just about to show results on a larger scale, and we expect to see much progress from Cordys during 2011. Cordys reports having about 500 accounts and more than 100,000 individual “seats.” This represents strong progress in a relatively short period of time.

- **LongJump.** LongJump also brings extensive experience with packaged applications to its PaaS endeavors. The company’s innovations in development tools for multitenant applications give it a strong product. LongJump also hopes to attract a strong following of ISVs and solutions providers, but it is just beginning to show results. We expect to see more in 2011. Forrester estimates that LongJump has at least 100 accounts, perhaps as many as 250.
- **Google.** Google is also a cloud pioneer; three years ago, it began offering a platform to access the substantial resources that run its search service. Google App Engine is the centerpiece of a burgeoning roster of services available for developers at code.google.com. Google’s initial target was web developers, but in 2010, it expanded into the enterprise market as well. Google’s customer base is difficult to get a fix on, as the service is freely available. Google reported having 250,000 subscribers (individual developers) during the past 12 months, but the number could be much higher. Google sells GAE primarily through its web presence but has begun working with ISVs as well.
- **Tibco Software.** Tibco is one of the largest middleware vendors in the industry, and it recognized the emergence of cloud computing as a new platform generation early on.⁸ Tibco has moved relatively quickly to bring its distributed computing technology to the cloud and made key acquisitions like DataSynapse during 2009 to further bolster its portfolio. Tibco’s primary interest is in beating its main competitors IBM, Oracle, and Software AG to the market for internal, or private, clouds. But we expect the company to also develop a public-cloud presence. Tibco is just getting started in PaaS, with fewer than 50 accounts and about 10,000 seats.

SUPPLEMENTAL MATERIAL

Online Resource

The online versions of Figures 5 and 6 are an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings.

Data Sources Used In This Forrester Wave

Forrester used a combination of three data sources to assess the strengths and weaknesses of each solution:

- **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria. Once we analyzed the completed vendor surveys, we conducted vendor calls where necessary to gather details of vendor qualifications.

- **Product demos.** We asked vendors to conduct demonstrations of their product's functionality. We used findings from these product demos to validate details of each vendor's product capabilities.
- **Customer reference calls.** To validate product and vendor qualifications, Forrester also conducted reference calls with two of each vendor's current customers.

The Forrester Wave Methodology

We conduct primary research to develop a list of vendors that meet our criteria to be evaluated in this market. From that initial pool of vendors, we then narrow our final list. We choose these vendors based on: 1) product fit; 2) customer success; and 3) their representation of important PaaS approaches. The number of PaaS choices was too large to fit into Forrester's Wave research methodology, so we evaluated a sampling of vendors. Clients should not interpret our decision not to evaluate a vendor as evidence that we feel that vendor is unworthy of consideration. We eliminated vendors that have limited customer references and products that don't fit the scope of our evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. Our criteria allowed us to look for explicit developer controls over a cloud application created with each PaaS. Some of the PaaS options we evaluated don't have strong developer controls over configuration, deployment, and management — those vendors hide these details to simplify the environment. In our experience, enterprise developers don't yet trust these "transparent" approaches — they want controls.

To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

We set default weightings to reflect our analysis of the needs of large corporations and like organizations — and/or other scenarios as outlined in the Forrester Wave document — and then score the vendors based on a clearly defined scale. These default weightings are intended only as a starting point, and we encourage readers to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve.

ENDNOTES

- ¹ PaaS also heralds arrival of a new generation of “elastic application platforms” that help developers build applications architected to take advantage of cloud’s dynamic scaling (elasticity). Forrester defines elastic application platforms in a recent report. See the April 26, 2011, “[Cloud Computing Brings Demand For Elastic Application Platforms](#)” report.
- ² For an analysis of how the PaaS market satisfies the additional requirements of ISVs and systems integrators, see the May 19, 2011, “[The Forrester Wave™: Platform-As-A-Service For Vendor Strategy Professionals, Q2 2011](#)” report.
- ³ In “The State Of Application Development In Enterprises And SMBs,” Forrester cites a survey of Dr. Dobb’s readers in which only 21% of Eclipse users cited use of a specific PaaS for their cloud efforts. Visual Studio developers were much more disposed to Windows Azure but still reported usage of Amazon EC2 and other IaaS options. See the April 11, 2011, “[The State Of Application Development In Enterprises And SMBs](#)” report.
- ⁴ The ranks of empowered businesspeople who want to develop applications are swelling due to the proliferation of easy-to-use development tools, the mushrooming demand for applications, the growth of cloud computing, and the inability of IT to keep up with demand. These businesspeople don’t want to become developers; they just need to get things done. See the January 21, 2011, “[Empowering The ‘Business Developer’](#)” report.
- ⁵ We evaluated Heroku but dropped the product from our research because our evaluation criteria would have lead to an unfair comparison. We designed our criteria to evaluate PaaS products that provide their own application development tools and services. Heroku provides a PaaS deployment framework and basic application services but relies on the Ruby ecosystem to provide development tools, frameworks, and utilities.
- ⁶ One reason it’s important to consider PaaS solutions’ capabilities across both private and public clouds: Even if your initial requirements appear to be confined to only internal clouds, our research shows that hybrid clouds (combined private/public) are growing increasingly common. Many applications that initially look like they could be delivered exclusively in a private cloud are later turning out to require some degree of hybrid footprint across both — if for no other reason than to integrate an app running in a private cloud with SaaS apps running in the public cloud. But there are many other usage scenarios giving rise to requirements for a hybrid approach. For example, public clouds also enhance the value and economics of internal cloud investments. The core reason for their value is that your internal cloud will never be large enough to meet all your company’s needs. Scalability testing, high-performance computing applications, and highly volatile web applications need on-demand capacity at times, and building out your internal cloud for these peaks is a quick way to destroy the return on investment of the cloud. So plan to link your internal cloud to a public cloud resource for these purposes. See the July 26, 2010, “[You’re Not Ready For Internal Cloud](#)” report.
- ⁷ For more insight on the strategy of Cordys and the turnaround from the initial go-to-market to the current partner-focused approach, see the January 30, 2009, “[The Strategic Turnaround: Cordys Repositions To Verticals With An Indirect Sales Model](#)” report.
- ⁸ For an overview of the traditional middleware market, including revenues by vendor, see the December 30, 2009, “[Market Overview: The Middleware Software Market, 2009.](#)”

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