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Magic Quadrant for Enterprise Application Platform as a Service, Worldwide

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Summary

Application platform technology in the cloud continues to be the center of growth as IT planners look to exploit cloud for the development and delivery of multichannel apps and services. We examine the leading enterprise vendors for these platforms.

Market Definition/Description

This document was revised on 14 April 2016. The document you are viewing is the corrected version. For more information, see the Corrections (/technology/about/policies/current_corrections.jsp) page on gartner.com.

Platform as a service (PaaS) is defined as application infrastructure functionality enriched with cloud characteristics and offered as a service. Application platform as a service (aPaaS) is a PaaS offering that supports application development, deployment and execution in the cloud, encapsulating resources such as infrastructure and including services such as those for data management and user interfaces.

An aPaaS offering that is designed to support the enterprise style of applications and application projects (high availability, disaster recovery, external service access, security and technical support) is enterprise aPaaS.

This market includes only companies that provide public aPaaS offerings. Gartner identifies two classes of aPaaS: high-control, typically third-generation language (3GL)-based and used by IT departments for sophisticated applications such as microservice-based applications; and high-productivity, typically model-driven and used either by IT or citizen developers for standardized application patterns such as those focused on data collection and access. Vendors providing only aPaaS-enabling software without the associated cloud service — cloud-enabled application platforms — are not considered in this Magic Quadrant.

Magic Quadrant

Figure 1. Magic Quadrant for Enterprise Application Platform as a Service, Worldwide

Source: Gartner (March 2016)

Vendor Strengths and Cautions

Appian

Appian (http://www.appian.com/) is known primarily as a business process management (BPM) software vendor, with offerings that also support data-driven and case-management-style applications. It has taken a unified-platform approach that enables a single process definition to be delivered across a range of devices without additional development. Appian applications can be developed and executed both on-premises and on its aPaaS.

STRENGTHS

Appian's aPaaS is an easy-to-use offering that displays a high degree of overall technical quality and achieves a high level of customer satisfaction: 90% of Appian's customers surveyed by Gartner viewed their experience with it as "excellent." Appian is best-suited to process-oriented organizations looking to deploy processes as apps across a range of devices,

including Web and desktop ones. It is also suited to data-driven and event-driven apps. Appian's metadata model offers a robust set of high-productivity tools with which to implement business logic for process-centric applications.

The data integration capabilities (called Records) included in the aPaaS solution enable developers to build applications that draw on data from across the enterprise by employing a wide variety of integration approaches. Developers can quickly visualize data in such a way that it can easily be acted on using Appian's structured and collaborative process orchestration capabilities.

Appian's pricing is the same for on-premises and cloud deployment of its platform. Appian offers customers flexibility in terms of how they deploy the solution, while the standardized pricing means that using the Appian cloud avoids infrastructure costs. The vast majority of Appian's customers choose to deploy on the Appian cloud.

Appian has demonstrated robust growth during its history, particularly from its cloud-hosted solutions. Appian has strong customer references, particularly from organizations in the financial services, insurance and government sectors.

CAUTIONS

Appian concentrates its marketing and sales efforts primarily on its core BPM and case management markets, rather than the more general enterprise aPaaS sector. While competitively priced against similar products, its platform is priced higher than many other enterprise aPaaS products.

Solutions built on Appian are not portable to other aPaaS vendors and may only be run in the Appian runtime environment, although this can be on-premises as well as in the cloud.

Appian offers few high-control capabilities for managing the cloud aspects of its platform: for example, it offers minimal capabilities for managing cloud resources at a granular level. Nor does it offer any out-of-the-box integration with API management tools, an increasingly important enterprise resource.

Half the Appian customers surveyed by Gartner for this Magic Quadrant thought the platform's service development features required improvement. For business logic services, external code can be used but is managed externally, while business logic created using Appian's proprietary rule expression language can be unwieldy for complex scenarios.

Caspio

Caspio (https://www.caspio.com/) offers Caspio Bridge, a high-productivity, database-centric business aPaaS. In 2000, Caspio was an early market pioneer with its "no-code" cloud platform, which used a directly executable metadata-driven model to describe all aspects of an application. Its products are available for both public and private clouds and are sold as SaaS for a monthly subscription. Paid support plans include live phone, email and chat for 24/7 emergency support.

STRENGTHS

Caspio Bridge is aimed squarely at business users. Its built-in visual tools facilitate the design and creation of table structures, relationships, authentication rules and roles. These tools enable users to create the various interfaces for applications, such as forms, reports and

search fields, and to customize application styling, localization and deployment. As a result, applications can be built quickly, with virtually no involvement from IT staff.

Caspio Bridge is cloud-native. All versions run on top of the infrastructure as a service (IaaS) foundation of Amazon Web Services (AWS). Caspio Bridge customers can select their specific data center for execution from Caspio's AWS options, and can easily migrate from one data center to another.

Caspio's compliance edition provides complete data encryption and audit logs for enterprise customers striving to meet their unique data protection and governance requirements. Its Health Insurance Portability and Accountability Act (HIPAA)-compliant edition meets U.S. requirements for the storage and use of protected health information and personally identifiable information.

The majority of Caspio clients surveyed by Gartner consider its product's ease of use and overall quality to be strengths.

CAUTIONS

Most of the Caspio clients surveyed by Gartner consider that Caspio Bridge's functional depth and completeness need improvement.

Although Caspio's singular focus on providing a high-productivity "no-code" aPaaS is a core strength, there is also demand for high-control aPaaS features. Caspio's specialization limits its appeal to enterprises looking for a "one-stop shop" for both high-productivity and high-control solutions.

Caspio is a well-established vendor, but remains one of the smaller players in a market with very large competitors. Its size may limit its strategic position relative to the larger vendors with wider product portfolios.

Cybozu (kintone)

Kintone is the U.S. corporation (since March 2016) and aPaaS offering of Cybozu (https://www.cybozu.com/en/) , a popular vendor of collaboration and groupware software in Japan. Cybozu's other cloud offerings are Garoon (groupware) and mobile apps (for groupware access), which run alongside kintone on Cybozu's own IaaS offering. Kintone is the only offering Cybozu markets and sells globally; it is designed for ease of information sharing, instant application development for citizen developers, and collaborative team working — using a Linux-Apache-PostgreSQL-PHP technology stack.

STRENGTHS

Kintone has more than 3,000 companies as subscribed clients and in excess of 100,000 end users globally, and this number is rapidly increasing.

Kintone offers citizen developers a high-productivity graphical drag-and-drop application development capability, the ability to incorporate Microsoft Excel spreadsheets into forms with prefilled data, and more than 50 prebuilt applications to download and customize.

Cybozu has more than 150 official system integrator partners for kintone, and a very active developer network. It holds more than 50 developer events a year.

Cybozu is expanding the kintone ecosystem by exploiting new scenarios — such as Internet of Things (IoT) control and machine-learning-based real-time prediction — by integrating AWS IoT, AWS Lambda and Amazon API Gateway technologies.

CAUTIONS

Kintone does not support any high-control capability. Nor does it support on-premises deployment, although applications are customizable with JavaScript/REST APIs.

Kintone users surveyed by Gartner consider its functionality to be relatively weak around service-oriented architecture (SOA), integration capabilities and product technical support.

Cybozu has traditionally had little presence and few customers outside Japan, although it does have partners in Hong Kong, Taiwan, Thailand, Singapore and Vietnam, and opened a regional kintone office in the U.S. during 2014.

Small or midsize businesses, rather than large enterprises, are the main buyers of kintone — in line with its focus on citizen developers.

Google

Google (https://cloud.google.com/appengine/docs) offers the Google App Engine, a shared-OS, high-control aPaaS for Java, Python, PHP and Go applications. It is one of the more mature aPaaS offerings, having first been delivered in 2008. Its next major release (the App Engine Managed VM Environment) is in beta at the start of 2016.

Google's aPaaS fits between the company's own IaaS (Google Compute Engine), SaaS (Google Apps for Work), and search and advertising services, and is claimed to be used for 90% of its internal IT services. Standard services include Google Cloud SQL, NoSQL, Memcache and Traffic Splitting.

STRENGTHS

As a major Internet and Web-scale company, Google is known as an innovator with an efficient Web business model. Google App Engine shares the same data centers as all other Google services, which implies good quality of service (QoS) and performance. Due to its scale, Google is well-placed to handle pricing pressures from competitors. The Google App Engine now also includes the ability to exploit large compute instances for power-hungry applications and services.

Google offers some more esoteric services, such as geolocation and data search services. There is also support for several good cloud practices, including autoscaling and API client library generation for mobile OSs (Google Cloud Endpoints). Although such services are perhaps more attractive to startups, their availability and maturity are useful for enterprise projects focused on innovative applications.

Deployment options are being extended to include a new dedicated App Engine Managed VM Environment, which promises hybrid-cloud solutions spanning App Engine with Google Compute Engine and Google Container Engine (the latter supporting the Docker container format). Together, they amount to a comprehensive set of options for users.

With 1.7 million active apps deployed, Google App Engine appears well-used — the majority of Google App Engine customers surveyed by Gartner claim 10,000 users or more. Furthermore, surveyed Google App Engine customers were unanimous in stating that any size of project could be tackled on this platform, and they praised its cloud capabilities.

CAUTIONS

Google App Engine still has a limited presence in enterprise IT. This could indicate that Google favors independent software vendors (ISVs). However, the list of users of Google App Engine includes several well-known brand names, which indicates the potential for greater enterprise adoption.

The focus on high-control aPaaS limits Google App Engine's use to professional IT developers. Citizen developers and users of services such as BPM need to look to partners such as OrangeScape that run software on Google Compute Engine, or augment Google App Engine with some other high-productivity aPaaS.

Google does not offer private aPaaS support. A hybrid aPaaS option using an AppScale port of Google App Engine software is limited in terms of function, concerns over Google's commitment, and adoption. Without a well-supported on-premises presence, Google leaves many mainstream enterprise projects to its competitors.

Google claims that Google App Engine's pricing is competitive. However, the pricing model is based on fine-grained metered resources — even down to the level of the number of database operations — which means that predicting pricing is likely to be more complex than for some other aPaaS offerings. Technically advanced users may welcome the especially close match of costs to use of resources, but many mainstream enterprise project managers will want more predictable costs of operation.

IBM

IBM (http://www.ibm.com/) offers a spectrum of hosted platform capabilities, with an emphasis on Java, from PureApplication Service on SoftLayer to WebSphere Application Server (WAS) in the cloud, WebSphere Application Server Docker Containers and Liberty Buildpack on IBM Bluemix. Only the last of these (specifically Bluemix Liberty for Java) is a true aPaaS offering where IBM takes responsibility for the versioning, health and scaling of the platform. IBM also offers the software development kit for Node.js on Bluemix, and a number of third-party Cloud Foundry buildpacks in support of other language frameworks.

Beyond the direct aPaaS capabilities, most Bluemix services are cloud-managed by IBM's own cloud foundation services (not by Cloud Foundry) and include a collection of Watson analytics, big data, mobile, security, IoT, integration, DevOps and other functionality — some owned by IBM and some contributed by partners. IBM aPaaS developers have access to most of these services via APIs, so they act as secondary components of the application platform, the specialized accelerators. A limited Bluemix suite is also available as a hosted private platform (Bluemix Dedicated) and a managed local private platform (Bluemix Local).

STRENGTHS

IBM's relationship with its customer base remains strong, as is indicated by customer surveys and Gartner client interactions. Customers report positive experiences of IBM's Bluemix support and their business relationship. Strategic support of the hybrid deployment model and the broad spectrum of platform choices, from hosted to cloud-native, are well-suited to the variety of cloud migration strategies used by IBM customers.

A companywide strategic commitment to cognitive computing is driving analytics and big data insight into all IBM offerings, including, via Bluemix service APIs, its aPaaS. IBM Analytics on Apache Spark, IBM Bluemix OpenWhisk (an event-driven application platform service, now in

"early access," and also available as open source) and Insight Cloud Services data broker technology are important examples relevant to aPaaS customers. This commitment positions IBM as a Visionary in the rapid transformation of IT from deterministic to adaptive and contextual, although proof of these technologies' worth in production environments remains to be seen.

The combination of the now-certifiable Cloud Foundry framework and IBM's cloud foundation services framework enables IBM to claim a degree of platform portability via Cloud Foundry, while adding unique cloud platform innovations via Cloud Foundation Services. Users get a choice of several cloud enablement models, including buildpacks, orchestrated Docker images and virtual machine (VM) images.

IBM's continuing investment in API management and event processing positions it well for the requirements of algorithmic business. Its API mining tools help organizations discover and incorporate legacy APIs and build modern and extensible hybrid IT environments. With the acquisition of Gravitant, IBM is also better-positioned than most of its competitors to serve as a cloud aggregation brokerage — an essential service for users of hybrid cloud services.

CAUTIONS

The pace of adoption of the Bluemix aPaaS capability is relatively modest — due partly to its continuing engineering, and still emerging technological, maturity. Despite positive feedback from Bluemix aPaaS customers about IBM's support and business relationship, some customers note occasional technical instability and service interruptions. With some notable exceptions (according to Gartner surveys), most early production customers are in relatively small IT departments (of dozens, not hundreds, of employees) that are deploying relatively small cloud-native applications.

Not all cloud characteristics are fully implemented in Bluemix aPaaS; disaster recovery arrangements are not automatic and require customer administration. There is no subtenancy support for SaaS ISVs; aPaaS access to other Bluemix service APIs lacks productivity tools; and the IaaS and PaaS are not integrated (though this work is underway).

The lack of a native high-productivity model-driven aPaaS pegs the use of Bluemix services to the more advanced IT engineering teams. This leaves the simpler high-urgency IT projects and most line-of-business projects that wish to use cloud platform services to IBM's competitors. The recent IBM partnership with Mendix (an aPaaS market competitor) provides a tactical solution, but leaves IBM vulnerable in this context in the long term.

The wide geographic availability of Bluemix Dedicated and SoftLayer offerings far exceeds that of the public Bluemix services, which drives many customers to the more expensive and less agile hosted private cloud experience.

Mendix

Mendix (https://www.mendix.com/) , which was founded in 2005 in the Netherlands and now has its headquarters in Boston, Massachusetts, U.S., is a small but well-established pure-play aPaaS provider. The Mendix Platform is a Cloud Foundry-based high-productivity aPaaS with high-control extensions. The Mendix Modeler is a no-code, model-driven visual development environment. Mendix models can be augmented with third-generation programming language code written in Java, JavaScript or Scala. The Mendix App Store provides a venue for vendors and users to share applications, widgets and services; it features hundreds of prebuilt

components and applications to accelerate your efforts. The Mendix Platform is available as a publicly hosted aPaaS on AWS and Microsoft Azure, and as on-premises software. The Mendix Business Server runtime is implemented as a Cloud Foundry buildpack, and can also be deployed on third-party Cloud Foundry-based public and private PaaS environments, including IBM Bluemix, Pivotal Cloud Foundry and Hewlett Packard Enterprise (HPE) Helion.

STRENGTHS

Mendix has a worldwide presence, with more than 550 paying customers and thousands of nonpaying users. The privately held company is well-funded ($25 million of Series B funding in 2014) and has a track record of strong annual growth.

The Mendix no-code modeling tool supports sophisticated data-driven and process-oriented applications, and it can generate mobile apps with offline support. Flexible deployment options enable customers to deploy applications on-premises, on Mendix Cloud, or on a supported public IaaS or Cloud Foundry-based aPaaS of their choice.

Mendix provides accelerators for industry-specific solutions for the insurance, financial services, higher education, life sciences, logistics and manufacturing sectors, among others.

Customers surveyed by Gartner identified ease of use and the end-user experience as Mendix's most compelling features.

CAUTIONS

Mendix is on an aggressive growth track, but is not yet profitable. Venture funding and revenue are being reinvested to execute the company's go-to-market plan.

Given that the Mendix Platform can be easily deployed in other environments, Mendix is an attractive acquisition target for high-control vendors looking to obtain a high-productivity offering.

Although Mendix has an established aPaaS business, it will face increasing challenges as megavendors such as IBM, Microsoft, Oracle, Red Hat and SAP ratchet up their high-productivity aPaaS efforts.

Customers surveyed by Gartner indicated that integration and back-end service development are areas in need of improvement for Mendix.

Microsoft

Microsoft offers application platform services in three forms. Microsoft Azure App Service (App Service) is described as supporting Web Apps (formerly Web Sites), Mobile Apps (formerly Mobile Services), API Apps, and Logic Apps. App Service is a fully provider-managed aPaaS offering aimed at the mainstream majority of customers. Azure Service Fabric (beta) and the original Azure Cloud Services (Web and Worker Roles) are partially customer-managed and are intended for more advanced application designs. All three offerings are high-control. Future PowerApps offerings are planned for high-productivity. The Web Apps part of App Service is included with Azure Pack for on-premises (private PaaS) deployment.

All of App Service and the Azure Service Fabric are planned to be available (over time) with the new Azure Stack software suite. Unlike the limited Azure Pack, Azure Stack is a strategic software offering intended for hybrid portability of most Azure PaaS capabilities, including aPaaS.

Microsoft's application platform services are part of a larger Azure cloud platform, where other PaaS capabilities (including integration, DBMS, analytics, IoT, batch and other services) are combined with IaaS capabilities (including compute and storage services). Microsoft Azure is available in Microsoft-owned and partner-owned data centers in all major geographic regions.

STRENGTHS

Microsoft distinctively combines its proven reputation as an enterprise IT provider with its growing acceptance as a competent cloud service provider. This coveted dual strength puts Microsoft ahead of most competitors, which typically lack its strength and reputation in cloud or enterprise computing. Gartner believes that future platform market leadership will demand competence in both enterprise and cloud computing QoS.

Azure aPaaS services are delivered worldwide, including two regions in China and other new regions facilitated by local partners to satisfy government regulations (such as in Germany). There is potential for further growth of local representation through partners deploying Azure Stack software. This, together with the strategy of openness through support of Linux, Docker and other open-source projects (including the open-source release of .NET framework), makes Azure more acceptable than in the past to a spectrum of customers worldwide who are often sensitive to lock-in issues and local regulations.

Windows developers familiar with .NET languages and frameworks find Azure a natural environment from which to move to cloud application development (IaaS for "lift and shift" and PaaS for cloud-native development). This gives Microsoft the opportunity to bring millions of .NET developers, as well as thousands of .NET ISVs, to Azure, and to establish a significant ecosystem of cloud application services (SaaS) and partners. If it materializes, such a SaaS ecosystem could help to elevate Microsoft's underlying PaaS offerings, including its aPaaS.

A rich collection of envisioned IoT, analytics and big data-related services (Archetype Query Language data warehouse and data lake analytics, Revolution R Enterprise analytics platform, U-SQL data catalog, event and notification hubs, stream analytics and IoT hub) promises a foundation for an advanced digital business platform. Most of this collection, however, is still under development and, without a high-productivity layer, it is suitable only for advanced and leading-edge developers.

CAUTIONS

The variety of options for Azure platform services, which include different levels of availability, productivity, degrees of "cloudiness" and QoS, can be confusing for some less sophisticated buyers. They have to navigate through:

The App Service environment that includes some unfamiliar types of applications such as Logic Apps and API Apps

The Docker and Apache Mesos platform in the previewed Azure Container Service

The Azure Service Fabric for microservices architecture (now in beta)

The older Azure Worker/Web roles in the original Azure Cloud Services

The future high-productivity Microsoft PowerApps

The traditional ASP.NET, also available in Azure on Windows VMs

Microsoft's strategic focus on competing with Amazon and others diverts some attention away from the core enterprise PaaS capabilities, such as application platform and integration. The slower pace of internal development that results from this threatens Azure's aPaaS momentum: Some key App Service capabilities (API Apps, Logic Apps' support for integration) and Azure Service Fabric are still not generally available, more than a year after their announcement. All of App Service remains based on the old cloud services, not the new Azure Service Fabric (which points to further re-engineering in the future). Container support is available only as IaaS+. Subtenancy support for SaaS ISVs and model-driven development for lines of business and citizen developers continue to be delayed, and are without a due date. Some customers complain about the productivity and functional completeness of Azure aPaaS.

Microsoft's SaaS offering (cloud application services such as Dynamics and Office 365) remains separate from its aPaaS. This decouples adoption of Azure aPaaS from the momentum of Microsoft SaaS and its SaaS customers looking to extend, customize and integrate SaaS capabilities. In an aggressively competitive cloud platform market, Microsoft will need a SaaS/PaaS synergy to succeed.

The Microsoft Azure environment lacks a high-productivity, model-driven application design and development capability (notwithstanding any future PowerApps and some support for workflow in Azure App Service). Having a high-control programming environment alone, without a competitive high-productivity option, limits Microsoft's market to advanced projects in enterprise central IT and independent developers, and therefore leaves many business opportunities to its competitors.

MIOsoft

MIOsoft (https://www.miosoft.com/) , which was founded in 1998, is based in Madison, Wisconsin, U.S. and has offices and data centers in Chicago, U.S., China and Germany. MIOsoft's MIOedge is a data-centric, high-productivity aPaaS with some high-control features. It includes data integration and business analytics capabilities, in addition to core data-centric application and object database platform services. It supports Hadoop, parallel processing and in-memory data processing. MIOedge is focused on big-data-analytics-oriented and context-aware application design, and is less suitable for common Web and other enterprise applications.

STRENGTHS

MIOsoft's strategic investment in big data management, data integration, business analytics and machine learning distinguishes it from most aPaaS competitors. Its platform can accommodate petabytes of data, and it supports parallel and hybrid transactional/analytical processing (HTAP).

Flexible deployment options enable customers to choose between public, virtual private and managed private cloud services, as well as on-premises software. Cloud services can be deployed in MIOsoft data centers or on AWS and other IaaS platforms.

MIOsoft has a worldwide presence, with more than 3,000 customers, and a track record of strong annual growth. Its PaaS business is profitable.

MIOsoft customers identify integration and overall quality as MIOedge's most compelling features.

CAUTIONS

MIOsoft's focus on NoSQL/Hadoop analytical data models makes its platform less suitable for simple transactional applications using a basic relational data model. The platform is not suitable for migrating existing enterprise applications to the cloud.

MIOsoft has minimal brand recognition, which reflects its limited marketing ability.

MIOsoft targets specific market opportunities in leading-edge IT organizations and advanced analytical application scenarios. This focus helps MIOsoft win these opportunities, but its lack of a general-purpose solution means that it misses out on mainstream opportunities.

Users identify ease of use and end-user experience as areas in which MIOsoft could improve.

Oracle

Oracle (http://www.oracle.com/) has introduced a range of cloud platform services. Some are already generally available and others will be introduced gradually during 2016. Recently introduced offerings are the high-control polyglot Docker-based Oracle Application Container Cloud (generally available in November 2015), and the high-productivity model-driven Oracle Application Builder and Oracle Mobile cloud services. These offerings join the previously available Java Cloud Service and Java Cloud Service for SaaS (both WebLogic Server IaaS+ offerings). PaaS Service Manager is the internal proprietary PaaS framework. The same cloud platform services are also available as an engineered system (the Oracle Cloud Machine) for private IaaS and PaaS deployment, with some degree of control retained by Oracle.

STRENGTHS

The planned continuum of options in application platform services positions Oracle well to serve the diverse needs of mainstream enterprise organizations gradually adapting to cloud computing. These range from IaaS for "lift and shift" VM hosting, to IaaS+ for light legacy modernization or Fusion SaaS extension, to high-control and high-productivity container-based aPaaS for cloud-native development, plus the on-premises and hybrid options supported by the Oracle Cloud Machine.

PaaS Service Manager is expected to eventually unify all Oracle xPaaS offerings (including application platform, integration, API management, process management, analytics and IoT services). This architectural blueprint, which also calls for integrated development and management tools, promises additional levels of synergy in Oracle's cloud portfolio.

The significant market presence of some Oracle SaaS offerings, plus the design of the Fusion application services that operate on Oracle's PaaS infrastructure, create a potentially strong channel for introducing Oracle aPaaS and other xPaaS capabilities. Together with Oracle's industry-leading sales and marketing organizations and capable engineering lineup, these offerings form a basis for growth, despite the company's relatively late entry into the cloud platform market.

The broad range of functionality in Oracle's overall cloud platform portfolio beyond the aPaaS capabilities — including its significant investments in business analytics, the IoT, security and identity, and information management, including big data and contextual data services, business applications and vertical solutions — creates opportunities for strategic business relationships with cloud service customers. This is important at a time when the PaaS and aPaaS markets, like Oracle's offerings, remain "under construction."

CAUTIONS

Although the older Oracle Java Cloud Service is well-established for Java Platform Enterprise Edition (Java EE) projects in the cloud, the more advanced new components of Oracle's aPaaS technology are unproven: Some were only recently released, others are still under development. The pace of project completion, the technical quality of the new software and the pace at which the new software will mature through different versions have still to be established. Notably, Oracle Fusion SaaS does not incorporate new versions of Oracle platform services for some time, to ensure technical maturity.

Most of Oracle's aPaaS technology stack is proprietary, though parts of it use Docker and several open-source language frameworks. This approach can facilitate more unique and differentiated capabilities, but also increases vendor lock-in for customers.

Although Oracle Cloud Java EE applications are likely to be portable to other providers' Java cloud services, there are no provisions for replicating the Oracle aPaaS technology stack on non-Oracle system foundations. In addition, the best QoS on Oracle Cloud is achieved using the optimizations available when the stack — from hardware to application and database containers — is Oracle technology. Oracle has to overcome customers' concerns about vendor lock-in (which may slow adoption), including some geographies sensitive to retaining infrastructure control.

The limited finer detail on cloud services in Oracle's financial reporting (especially in relation to its cloud platform indicators and PaaS), combined with the old, but lingering, memories of Oracle executives' public rejection of the cloud computing model, contribute to skepticism in the market about Oracle's marketing and product positioning. The company has yet to overcome this issue.

Lack of support for subtenancy makes it difficult for SaaS ISVs to set up shop on the Oracle Cloud Platform, although the most technically advanced ISVs may build some subtenancy using Oracle's pluggable DBMS and uniquely multitenant WebLogic Server 12c Release 2 application server. A growing ecosystem of SaaS and other ISV partners is an essential element for leadership in the PaaS market. Limited specialized support for SaaS ISVs will slow the growth of Oracle PaaS and might be exploited by Oracle's competitors.

OutSystems

OutSystems (https://www.outsystems.com/) offers a high-productivity enterprise rapid application delivery (RAD) PaaS that focuses on accelerating the "time to solution" of enterprise apps. OutSystems Platform uses an indirectly executed metadata-driven model — that is, the metadata model is used to generate .NET or Java code, which ultimately drives the execution of the application. Applications are developed using native desktop tools and deployed on-premises, or in a private or public cloud, and are usable with Web and mobile devices.

STRENGTHS

OutSystems Platform offers a comprehensive set of metadata models to configure application layers — business processes, integration workflows, UIs, business logic, data models, Web services and APIs — enabling high-productivity development and faster time to solution. Developers can compose and/or incorporate their own custom Java or C# code or libraries. The vast majority of customers surveyed by Gartner viewed ease of use as a strength of the platform.

Applications built using OutSystems Platform can be exported (to an Eclipse or Visual Studio project, for example) and can be deployed and maintained outside the OutSystems aPaaS. Also, the platform lets developers take a hybrid approach to application development and hosting, thus avoiding lock-in to any one platform. Most OutSystems customers surveyed by Gartner praised its hybrid capabilities and overall quality.

Through the OutSystems Forge, anyone (including partners, enterprise and individual developers, and OutSystems itself) can provide — and developers have access to — prebuilt accelerators that offer additional platform capabilities, such as Google Maps, email and PayPal service integration.

OutSystems Platform provides a number of APIs, such as those allowing detailed monitoring of application and environment performance metrics. It also enables the management of user accounts and access roles. In addition, it provides other components, including Business Process Technology (BPT) for processes and activities, Charts, TaskBox for custom activity inbox management, and REST to consume external APIs.

CAUTIONS

Although generated code can be detached from OutSystems Platform, generated code modified outside cannot easily be reintegrated into the original solution without rework (there is no support for automated round-trip development).

While customer-created custom code can be used within Outsystems Platform, it does not provide the ability to manage the life cycle of these components; customers have to manage their own code outside the platform.

The OutSystems Forge currently provides no way for partners to monetize their Forge components — there is, therefore, little incentive for developers to contribute to Forge. Furthermore, guaranteed technical support is provided only for a handful of the available Forge components; most components are published by third parties, and support is provided by the components' creators through a discussion forum.

Although OutSystems provides some analytic capabilities "out of the box" (such as business activity monitoring), applications that require stream and big data analytics need to use third-party services alongside OutSystems Platform.

QuickBase

QuickBase (http://quickbase.intuit.com/) is a business-user-centric high-productivity aPaaS. Although QuickBase was still offered by Intuit during our research for this Magic Quadrant, following the anticipated completion of its acquisition by private equity firm Welsh, Carson, Anderson & Stowe (WCAS), during 1H16, it will operate as a stand-alone company based in Cambridge, Massachusetts, U.S.

QuickBase employs a "no-code," directly executable metadata-driven application model. QuickBase is based on a public cloud-only, multitenant, shared-resource, cloud-native architecture; it is licensed by monthly per-user subscription plans, tiered by the number of applications deployed. Support plans are currently all electronic (email and ticketing), but a 24/7 phone support program has also been piloted.

STRENGTHS

QuickBase's metadata-driven approach targets ease of use. Table definitions, relationships, forms, reports, charts and dashboards are built declaratively, with much of the UI automatically generated. Custom business logic is encoded in formulas, form rules or JavaScript embedded in code pages.

Compared with many of its competitors (particularly other high-productivity market specialists), QuickBase has a large and loyal customer base.

The QuickBase App Exchange provides access to hundreds of prebuilt apps, including access to the source design of the app. Many builders use the QuickBase App Exchange as a source for design patterns with which to implement features in their own apps.

QuickBase customers surveyed by Gartner had the highest number of projects using the aPaaS. Customers gave QuickBase high scores for ease of use.

CAUTIONS

The majority of QuickBase customers surveyed by Gartner stated that the product's integration features need improvement, although this has been an area of significant investment in recent releases.

QuickBase's focus on a high-productivity no-code aPaaS is a core strength, but enterprises also demand high-control aPaaS features. Unlike some of its competitors, QuickBase's market specialization limits its appeal to enterprises looking for a "one-stop shop" for both high-productivity and high-control solutions.

QuickBase is investing in a next-generation architecture that will move it to an entirely responsive design, where apps are fully optimized for phone, tablet and desktop devices. At present, however, while the platform does have a mobile-specific interface (generated automatically), its support for multichannel application architectures is limited.

QuickBase has historically been a well-established platform with a substantial customer base (under the Intuit brand). Gartner believes that its acquisition by WCAS (due to complete in 1H16) will resolve concerns about the future disposition of the platform; however, any change in ownership inevitably creates new challenges as the product shifts to being sourced from a stand-alone company.

Red Hat

Red Hat (http://www.redhat.com/) made good progress with its OpenShift family of PaaS offerings in 2015. OpenShift Origin is an open-source, high-control, polyglot PaaS framework that serves as the foundation for the OpenShift family. Red Hat provides two configurations of its public aPaaS: OpenShift Online (with shared VMs) and OpenShift Dedicated (with dedicated VMs). Red Hat also provides an on-premises, cloud-enabled application platform called OpenShift Enterprise, which IT organizations can use to build a private PaaS environment. All variants of OpenShift run on Red Hat Enterprise Linux, and can be deployed on AWS, OpenStack, VMware or bare metal. OpenShift Origin is available for free download without support. OpenShift version 3 includes full support for Docker and uses Kubernetes for cluster management. Red Hat provides certified and curated Docker platform images, including the full suite of JBoss middleware, plus support for Node.js, Perl, PHP, Python and Ruby, as well as MongoDB, MySQL and PostgreSQL. Users can define their own certified container images to support any language, framework, high-productivity tool or add-on service. Users and third-party vendors can share or sell container images via Red Hat's OpenShift Marketplace, which is gaining traction.

STRENGTHS

All Red Hat OpenShift products use the same codebase and offer users the choice of deployment in the public cloud or in the enterprise's data center.

Red Hat's financial strength and its expertise in Linux, Java and security make its offerings attractive to enterprises. Red Hat's public PaaS customer base doubled in 2015, and the company offers global deployment options and support.

The Red Hat JBoss software stacks are familiar to many enterprise developers. Full Docker support allows users to take advantage of the extensive Docker ecosystem.

Users cite overall quality, ease of use and back-end development as compelling advantages of Red Hat's platform.

CAUTIONS

Docker and Kubernetes have tremendous potential, but these technologies are still young and evolving.

OpenShift requires Red Hat Enterprise Linux, which limits deployment options.

Users identify end-user experience, integration and functional completeness as areas in which Red Hat needs to improve.

Limited subtenancy features make OpenShift less attractive to SaaS providers. The OpenShift Marketplace includes the usual assortment of add-on middleware and utilities, but it is noticeably lacking in third-party applications.

Salesforce

Salesforce (http://www.salesforce.com/uk/?ir=1) is a SaaS pioneer; its CRM SaaS offering was introduced in 1999, from which it derived its high-productivity aPaaS in 2007 as Force.com. Salesforce Heroku also dates from 2007; Salesforce acquired it in 2010 to provide a complementary high-control aPaaS offering. Salesforce App Cloud (a renamed Salesforce1 Platform) is the unified service offering for Force.com, Heroku and other services.

Force.com exploits the same proprietary, high-scale, cloud-native platform that underlies Salesforce CRM applications, and was originally developed to provide extensibility to Salesforce Sales Cloud. It now allows easy access to customer data and customer-related schema, while also enabling new custom applications and data to be developed. Force.com runs on Salesforce's own infrastructure, hosted in worldwide colocation data centers as a public-only offering.

Heroku is a separate, multilingual, shared-OS aPaaS offering for professional IT use; it runs on AWS infrastructure as a public offering (with a dedicated option called Heroku Enterprise Private Spaces). Salesforce provides a bidirectional data synchronization bridge between Heroku data services (using PostgreSQL) and Force.com platform data services.

STRENGTHS

Salesforce is by far the largest provider in the enterprise aPaaS market by revenue (more than $1 billion) and customer base. Its familiar name, reputation and strong abilities in CRM, as well as its high-productivity and high-control aPaaS offerings, mean that it is the aPaaS most

considered by aPaaS clients surveyed by Gartner. Of these surveyed clients, the Salesforce customers gave App Cloud high scores for cloud support ("cloudiness"), ease of use, integration and overall quality.

The proven, mature Force.com platform has been extended recently with the Lightning platform (UI, development, and app store services), Shield encryption services and two-factor authentication security. Additional data and service access bridges enable joint Force.com and Heroku application development. Force.com provides easy access to customer-related data schema and, for SaaS customers, CRM data. Salesforce plans high-performance and big data enhancements, enhanced testing features and improved Docker support.

Heroku is also a proven, mature platform. Recent additions include in-memory support (Redis) and a dedicated option (Heroku Enterprise Private Spaces). Heroku provides the high-control capabilities for the newest Salesforce platform, Salesforce Thunder, offering big data, event-processing and rule-processing capabilities to support the IoT.

Salesforce App Cloud includes a vibrant app store (with approximately 2,900 apps) and Trailhead, a training community program that helps support developers (supporting the certification of more than 25,000 developers and administrators).

CAUTIONS

While Salesforce remains the largest vendor of SaaS and aPaaS, it has a reputation for being expensive. Pricing per user makes consumer applications unlikely on Force.com (although for these applications Heroku would be more suitable anyway). Half the Salesforce clients surveyed by Gartner described the price-to-value ratio as only "fair" or worse.

Salesforce's competitors in the aPaaS market are starting to catch up in terms of features and functions, such as combined high-control and high-productivity, subtenancy and accelerators. The net effect is a decline in Salesforce's lead over its competitors.

The high-productivity nature of Force.com means no cross-PaaS portability (although this is generally a characteristic of this type of aPaaS). Similarly, the native-cloud nature of Force.com and Heroku means no private (on-premises) cloud or hybrid deployments.

Although the combination of Force.com and Heroku provides powerful enterprise capabilities, the different platform architectures and deployment models (Force.com runs on Salesforce data centers, whereas Heroku relies on AWS) mean that there remains an architectural dissonance between the two.

SAP

SAP (http://www.sap.com/) has reinvented its technology stack to one that embraces modern technologies such as the in-memory database and application platform (SAP Hana), which in turn forms the core of the SAP Hana Cloud Platform (HCP) as well as S/4 Hana and SAP's next-generation Business Suite software.

SAP HCP is a high-control, shared-hardware PaaS that was first delivered in 2012. SAP markets HCP as a PaaS for development (aPaaS), integration (iPaaS) and extending SAP applications. HCP supports Java EE and JavaScript, mobile and Web UI, user experience as a service, and collaboration scenarios. SAP HCP also provides the backbone for new cloud services, such as the SAP IoT services, Smart Data Streaming, Remote Data Sync, and SAP Cloud for Analytics offerings.

STRENGTHS

SAP HCP offers prebuilt integration with S/4 Hana and SAP SaaS solutions, as well as more general integration (iPaaS) services. The embedded or optional PaaS services (that is, geospatial, graph, textual IoT and event-stream processing support) allow for Mode 2 innovation applications on HCP.

SAP Hybris-as-a-service (YaaS) provides HCP users with SAP authored and supported business services such as customer loyalty and commerce. Other business services, such as tax calculation, are available and SAP promises to add industry-specific services in the future.

SAP HCP supports some high-productivity/rapid application development features with a Web-based integrated development environment (IDE) and a UI designer for prototyping (code generation capabilities are also planned). In the future, Cloud Foundry support will enable additional services, such as Docker and alternative databases, as well hybrid deployment models.

The SAP HCP customers surveyed by Gartner consider the best features of the platform to be its integration and end-user experience.

CAUTIONS

Some SAP customers surveyed by Gartner considered HCP's functional depth and completeness to be the area most in need of improvement.

HCP remains little known outside SAP's customer base. Likewise, most of the HCP users surveyed by Gartner considered and selected HCP because SAP is their preferred vendor (some did not evaluate any other offerings). Reliance on such customer loyalty could weaken SAP's competitiveness over time.

Although considered a high-control aPaaS, language support is limited to Java and JavaScript, at least until Cloud Foundry, with its associated buildpacks for different languages, is also supported.

SAP announced its Cloud Foundry and OpenStack plans for HCP more than a year ago. It has delivered Cloud Foundry, but initially for on-premises Hana customers only; HCP support is still pending.

ServiceNow

ServiceNow (http://www.servicenow.com/) is best known for its widely used Service Management SaaS. Its ServiceNow platform developer tool aPaaS is the same platform as its SaaS, following a SaaS-to-PaaS evolution. The underlying service development is therefore funded by the company's SaaS business. The platform development tools form a high-productivity aPaaS that offers workflow (human and automated), system integration capabilities and form design with some JavaScript programming capabilities. The underlying architecture is based on Java, Tomcat and SOA. The aPaaS offering has been available since 2013, but was not initially marketed beyond the company's SaaS user base.

STRENGTHS

A recent reorganization has placed ServiceNow's aPaaS into a new business unit for better focus — a sign of the company's commitment to this market. In addition, the good reputation of ServiceNow's SaaS reassures IT departments investing in its aPaaS.

ServiceNow uses the same 16 data centers for its SaaS and aPaaS. They are located across North and South America, Europe and Asia/Pacific and the company plans to add two more during 2016. It claims that 28,000 developers and 250 ISV partners use its platform. Customers pay only for deployed apps, not for development instances, which is a sign of a confidant vendor.

ServiceNow has used its service management experience to create a Software Development Lifecycle service that provides application planning and issue management. It should attract enterprises that do not want to deploy more expansive solutions for citizen developer projects.

The ServiceNow customers surveyed by Gartner put ServiceNow in the top three vendors for general satisfaction. Their favorite feature of its aPaaS is its ease of use for developers.

CAUTIONS

ServiceNow relies on shared hardware multitenancy, with an option for on-premises installation and dedicated hardware. Dedicated instances can mean less-than-rapid elasticity, but ServiceNow does offer subtenancy as well.

ServiceNow has only relatively recently started focusing on the aPaaS market. This might indicate uncertainty about the go-to-market strategy for the aPaaS offering outside ServiceNow's SaaS client base.

ServiceNow has recently updated its IDE, encryption services and REST API handling. However, some roadmap features can be considered as playing catch-up with many of its competitors.

Zoho

Zoho (http://www.zoho.com/) offers Zoho Creator, a high-productivity, database-centric business aPaaS. Zoho emphasizes a low-code development experience that is usable by citizen developers. Its platform uses a directly executable metadata-driven model to describe all aspects of an application. Zoho Creator works with the wider Zoho suite of tools, which has long focused on serving the needs of small or midsize businesses. Zoho Creator offers some scripting capabilities, through a model-driven visual-scripting environment, for the writing of code using a proprietary language called Data-Enriched Language for the Universal Grid Environment (Deluge). Zoho Creator is available only as a public cloud hosted PaaS, but Zoho plans to add partial on-premises deployment support in the future. Zoho Creator can be used to orchestrate the use of the Zoho Office Suite, which includes enterprise productivity SaaS applications such as Zoho CRM.

STRENGTHS

Zoho Creator is a very easy-to-use platform. It offers drag-and-drop configuration of the metadata model used to build applications. Applications can be built quickly, with little or no involvement from IT staff.

Zoho Creator is very "cloudy." The platform abstracts all management of the elasticity of compute and storage resources from the developer. All tenants are hosted on shared resources, with logical tenant separation. It also meets enterprises' availability and reliability needs.

Citizen developers, and IT leaders charged with supporting citizen developers, may find Zoho Creator's pricing attractive. Although not the most powerful application development platform, Zoho Creator is inexpensive and meets the high-productivity application development needs of

citizen developers looking to build database-centric business applications. A citizen developer can build modestly complex business applications within the confines of the model.

Zoho Creator is easily integrated with Zoho's suite of online productivity tools, as well as with a handful of other services, such as those of Salesforce and Intuit (QuickBooks). Additional integrations can be created using Deluge.

CAUTIONS

Zoho Creator is suited only to the simplest of enterprise applications. Although it offers administrative and deployment features, it caters only for the simplest of applications and provides minimal application life cycle management. Zoho Creator also provides no API access to administrative capabilities.

Although Deluge offers developers some high-control capabilities and enables the construction of some custom logic, it only allows composition using the platform's existing functions. Although third-party services can be integrated through prebuilt connectors or Deluge scripts, they cannot be embedded directly within the application.

Zoho Creator does not offer subtenant self-service management, which limits the ability of ISV partners to provide SaaS applications to their customers.

Support for Zoho Creator is available only 24/5 — there is no weekend support.

Vendors Added and Dropped

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

Added

The following vendors were deemed to meet the technical definition for enterprise aPaaS and to pass the inclusion criteria thresholds for aPaaS revenue and paying customers:

Appian was added due to sufficient focus now being placed on the aPaaS market, from a vendor known previously for its business process management PaaS offering.

Caspio, Cybozu and QuickBase were added as high-productivity platforms suitable for enterprise use.

ServiceNow was added due to the now asserted separate availability of its aPaaS outside of its SaaS offering.

Dropped

The following vendors were deemed to not pass the raised thresholds for public aPaaS revenue, the count of paying production customers, or both. They are, however, likely to remain good choices for certain clients:

Indra Systems — High-control aPaaS (Gnubila)

NTT Communications — High-control aPaaS (Cloudn)

OrangeScape — High-productivity aPaaS

Progress — Both high-productivity aPaaS (Rollbase) and high-control aPaaS (Modulus)

Software AG — High-productivity aPaaS (webMethods AgileApps Cloud).

In addition to those not passing the thresholds for inclusion:

Engine Yard — Has moved its focus away from the mainstream aPaaS market to more of an IaaS+ capability using AWS.

cloudControl — Was reported to have filed for bankruptcy and its services (including the dotCloud service acquired from Docker in 2014) closed down during February 2016.

Inclusion and Exclusion Criteria

To be included in this research, vendors must offer (as of 1 September 2015) at least one platform with the following characteristics:

It has to be a cloud service:

Available by subscription and accessible over Internet technologies

Available uniformly to all qualified subscribers

Including some sharing of physical resources between logically isolated tenants (subscribers or applications)

Including some self-service provisioning and management by subscribers

Including bidirectional scaling without interruption of activities and with some automation

Including some instrumentation for resource-use tracking

It has to be a PaaS:

It encapsulates the underlying virtual or physical machines, their procurement, management and direct costs, and does not require tenants to be aware of them (optional access is ok).

It delegates to the providers the patching, versioning and health of the platform stack.

It has to provide a minimal set of aPaaS capabilities:

Support for the deployment of applications utilizing data schema and application logic

Includes tools to develop, version, test, deploy, execute, administer, monitor and manage the applications and their relevant artifacts

Enables the invocation of external service APIs

It has to be enterprise-grade and aimed at enterprise-class projects, by:

The provider taking some responsibility for:

High availability and disaster recovery

Security of access to application services

Technical support to paying subscribers

Enabling third-party application access to application logic and/or data via services

It has to be provided as a "stand-alone" service. The platform's clients can subscribe to only the aPaaS capability and not to some other optional cloud service — for example, a SaaS application or another form of PaaS, such as Internet of Things PaaS or business process management PaaS — of which the aPaaS capabilities are an "embedded" subset.

It has to be generally available, with at least 200 organizations as customers paying to use the public aPaaS as of 1 September 2015.

It has to have generated an estimated revenue of at least $5 million (or equivalent) for the preceding 12 months.

The aPaaS market continues to develop rapidly. This research represents a snapshot in time.

Many vendors in the cloud platform market do not appear because they did not meet the thresholds for revenue or count of paying customers, have not yet implemented sufficient cloudiness, or did not sufficiently meet the requirements of enterprise-style software projects by 1 September 2015. Some of the vendors and offerings in this category are included in the Appendix section.

Evaluation Criteria

Vendors in Magic Quadrants are scored on two axes: Ability to Execute and Completeness of Vision. These relate to their current year's performance (that is, 2015 in this case, because this research began in September 2015) and their vision for the following years. Vendors are scored according to the Gartner methodology for Magic Quadrants and these scores define each vendor's position. In each successive year, the evaluation criteria are changed as new technologies are defined, new markets addressed and new roadmaps created. Vendors are invited to provide the data for the evaluation criteria via questionnaires and briefings, but evaluations also include the results of Gartner customer surveys and analyst information from client inquiries.

*Note: Throughout this section, * denotes general interoperability and integration characteristics that any enterprise application platform should support. For an assessment of more advanced integration capabilities in specialist iPaaS refer to "Magic Quadrant for Enterprise Integration Platform as a Service, Worldwide."*

Ability to Execute

Gartner analysts evaluate technology providers on the quality and efficacy of the processes, systems, methods or procedures that enable an IT provider's performance to be competitive, efficient and effective, and to positively impact revenue, retention and reputation. Ultimately, technology providers are judged on their ability and success in capitalizing on their vision.

Table 1.   Ability to Execute Evaluation Criteria

Evaluation Criteria	Weighting
Product or Service	High
Overall Viability	Medium

Evaluation Criteria	Weighting
Sales Execution/Pricing	Medium
Market Responsiveness/Record	Medium
Marketing Execution	Medium
Customer Experience	High
Operations	Medium

Source: Gartner (March 2016)

To evaluate the Product or Service criterion (that is, the capabilities of a vendor's available enterprise aPaaS offerings), we examined the following characteristics (with their associated weighting in parentheses):

Degree of cloudiness (Medium), including some or all of:

Self-service access to provisioning, monitoring and management of platform and applications

Sharing of resources across tenants

Tenant isolation

Bidirectional scaling and autoscaling versus the minimum unit of scaling

Resource-use tracking

Shielding users from operational responsibilities (for versioning, patching, health, and VM management/costs)

Enterprise worthiness (Medium), including some or all of:

High availability

Disaster recovery

Secure access

High-volume throughput

SLAs

Exposure and access to "near and far" (that is, local/in-process and remote/external) application APIs*

Technical support

Functional completeness (breadth of offering; Medium) and functionality of an application platform, including some or all of:

Execution of encoded application logic

Access to data in different formats

Multichannel applications

Composite applications

Life cycle management tools (DevOps)

API management*

Monitoring, management and administration of application execution

Analytics, IoT and big data capabilities

Openness (Medium), including some or all of:

Application portability across on-premises private and public cloud deployments (hybrid)

Application portability with third-party aPaaS

Platform portability across third-party IaaS

Support of standards (de facto or de jure)

Use of open-source components

Exposure of platform and application functionality via APIs

Ability to invoke external APIs

High-control application development support (High), including some or all of:

Multilingual structured programming

Use of programming frameworks

Use of event-driven and request-driven communication models*

Programmatic access to data sources*

Custom design of service APIs for near and far access*

Programmatic invocation of external (near and far) service APIs*

Cloud control aspects such as elasticity control or subtenancy support

In-memory computing

Parallel computing

Integrated tooling for:

Application design

Development

Life cycle management and administration (DevOps)

High-productivity application development support (High), including some or all of:

Model-driven encoding of:

Business logic

Decisions and rules

      Process flows (orchestrations and choreographies)

      Multiple styles of data

      Multistyle/multidevice UI

      State/state transition models

   Automatic and protected support of cloud characteristics

   Libraries of prebuilt applications:

      Services (executable)

      Software modules (source)

      Data models/schemas

      Data content

   Integrated high-productivity tooling for:

      Management

      Testing

      Deployment

      Versioning

Architectural versatility and consistency (High), including support for some or all of:

   Integrated high-productivity and high-control

   Service-oriented architecture (SOA)

   Event-driven architecture (EDA)

   Microservices (fully independent data-owning services)

   Software-defined application services (SDAS)

   Model-view-controller (MVC)

   Batch processing

   Eventual consistency (basically available, soft state eventual consistency [BASE])

   Atomic consistency (atomicity, consistency, isolation and durability [ACID])

   In-memory computing

   Parallel computing

   Context-aware computing

Completeness of Vision

Gartner analysts evaluate technology providers on their ability to convincingly articulate logical statements about current and future market direction, innovation, customer needs and competitive forces, and how well they map to the Gartner position. Ultimately, technology

providers are rated on their understanding of how market forces can be exploited to create opportunity for the provider.

Table 2. Completeness of Vision Evaluation Criteria

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

Source: Gartner (March 2016)

To evaluate the forward strategy for functional capabilities of a vendor's enterprise aPaaS offerings (that is, the Offering (Product) Strategy), we examined the available roadmaps and credibly committed initiatives for the following characteristics (with their associated weighting in parentheses); note these are the same criteria as for Ability to Execute, but with different weightings and evaluating the vendor's future plans rather than the past year's execution:

Degree of cloudiness (Medium), including some or all of:

Self-service access to provisioning, monitoring and management of platform and applications

Sharing of resources across tenants

Tenant isolation

Bidirectional scaling and autoscaling versus the minimum unit of scaling

Resource-use tracking

Shielding users from operational responsibilities (for versioning, patching, health, and VM management/costs)

Enterprise worthiness (Medium), including some or all of:

High availability

Disaster recovery

    Secure access

    High-volume throughput

    SLAs

    Exposure and access to near and far application APIs*

    Technical support

Functional completeness (breadth of offering; High) and functionality of an application platform, including some or all of:

    Execution of encoded application logic

    Access to data in different formats

    Multichannel applications

    Composite applications

    Life cycle management tools (DevOps)

    API management*

    Monitoring, management and administration of application execution

    Analytics, IoT and big data capabilities*

Openness (Low), including some or all of:

    Application portability across on-premises private and public cloud deployments (hybrid)

    Application portability with third-party aPaaS

    Platform portability across third-party IaaS

    Support of standards (de facto or de jure)

    Use of open-source components

    Exposure of platform and application functionality via APIs

    Ability to invoke external APIs*

High-control application development support (High), including some or all of:

    Multilingual structured programming

    Use of programming frameworks

    Use of event-driven and request-driven communication models*

    Programmatic access to data sources*

    Custom design of service APIs for near and far access*

    Programmatic invocation of external (near and far) service APIs*

    Cloud control aspects such as elasticity control or subtenancy support

    In-memory computing

    Parallel computing

Integrated tooling for:

Application design

Development

Life cycle management and administration (DevOps)

High productivity application development support (High), including some or all of:

Model-driven encoding of:

Business logic

Decisions and rules

Process flows (orchestrations and choreographies)

Multiple styles of data

Multistyle/multidevice UI

State/state transition models

Automatic and protected support of cloud characteristics

Libraries of prebuilt applications:

Services (executable)

Software modules (source)

Data models/schemas

Data content

Integrated high-productivity tooling for:

Management

Testing

Deployment

Versioning

Architectural versatility and consistency (High), including support for some or all of:

Integrated high-productivity and high-control

Service-oriented architecture (SOA)

Event-driven architecture (EDA)

Microservices (fully independent data-owning services)

Software-defined application services (SDAS)

Model-view-controller (MVC)

Batch processing

Eventual consistency (BASE)

Atomic consistency (ACID)

In-memory computing

Parallel computing

Context-aware computing

Quadrant Descriptions

Leaders

Leaders in a market combine an insightful understanding of the realities of the market, a reliable record, the ability to influence the market's direction, the capability to attract and keep a following, and the capacity to lead.

In the enterprise aPaaS market, leadership implies an understanding of the demands of the enterprise and the opportunities of cloud computing, and a genuine commitment to enterprise cloud computing. A Leader must have demonstrated a market-leading vision and the ability to deliver on that vision. It must provide the set of services required by the enterprise in a public cloud offering. In this developing market, few vendors have sustained excellence in both execution and vision for long enough to demonstrate effective leadership, but with growing strategic levels of investment, we expect multiple vendors to advance in this direction during the next three years.

Note that a Leader is not always the best choice for any particular enterprise initiative. A focused, smaller vendor can provide excellent support and commitment to individual customers, especially when geographic or vertical industry specifics, or the need for a deep capability and commitment to specific features/functions, are important. Such a vendor would not be rated as a Leader in the overall market, but within a specific segment it may be treated as such.

Challengers

Challengers in a market excel in their ability to attract a large user following, but this ability is limited to a subset or segment of the market. For members of that target audience, Challengers can be treated as Leaders, but that specificity presents a barrier to adoption for those outside the segment.

In the enterprise aPaaS market, a Challenger may have a strong proven presence and following in the Web and/or mobile development market, but lack traction, commitment or insight in the larger scene of the enterprise market. A Challenger must demonstrate a sustained excellence in execution and must have amassed a significant following, which is hard to achieve in this new and still evolving market. Only one vendor is rated as a Challenger in the enterprise aPaaS market this year, which is indicative of the lack of maturity in the market — few vendors are exceeding vision with execution, yet.

A Challenger can evolve into a Leader if it adopts aggressive, innovative strategies to expand to the full-breadth target market; demonstrates exceptional insight in understanding of IT market direction; and retains the capability to deliver on its vision.

Visionaries

Visionaries in a market are innovators that drive the market forward by responding to emerging leading-edge customer demands and by offering the businesses of their customers' new opportunities to excel. Typically, these vendors appeal to leading-edge customers, and may have minimal mainstream presence or name recognition. Their ability to deliver sustained and

dependable execution in the mainstream enterprise market is not sufficiently tested. Note that the vision of a vendor is not expressed just in its technological innovation; insightful understanding of market trends is also required for visionary marketing, sales, and product and business management strategies.

In the aPaaS market, the visionary vendors include many of the classic enterprise software vendors as they invest to reinvent themselves for the next generation of application developers. Generally, visionary vendors are investing in leading-edge enterprise aPaaS services not yet readily adopted by mainstream enterprise customers; thereby adding support for capabilities such as big data and stream analytics, IoT, event-driven and in-memory platforms, and offline mobile computing. Other Visionaries excel in understanding enterprise demands on the road to cloud adoption and support: high productivity for LOB users; polyglot high-control and continuous integration/continuous delivery (CI/CD) through containers for IT developers; integration, orchestration and API management for composite application services; and self-service management for hybrid application deployments.

Some Visionaries will eventually grow to become Leaders or will be acquired by Challengers seeking a leadership position in the market. Others will limit their target markets to focus on their core competencies and will become Niche Players, or they will mature their specialty to become Challengers.

Niche Players

Niche Players in a market typically specialize in a vertical, geographical or functional area, therefore addressing only a segment of a market. Neither their execution nor their vision is market-leading; often, these are vendors in transition from or to other markets, or they may be subject to excessively conservative risk-averse leadership.

In the enterprise aPaaS market, many Niche Players are genuinely "niche"; for example, supporting just the citizen developer, a particular vertical, or a geographic or use-case specialization. Some may have retracted to being niche from a prior visionary status, due to concentration of their vision to pursue a particular market segment.

Niche Players will often represent the best choice for a specific category of buyer, or for a particular use case. They typically offer specialized expertise, focused support practices, flexible terms and conditions, and greater dedication to a particular market segment and its customers.

Some Niche Players will improve their Ability to Execute and evolve into Challengers. Others will discover innovative solutions that attract interest beyond their niche segments and will emerge as Visionaries. Some will look to strengthen and broaden their businesses to challenge the Leaders. In this fast-changing and consolidating market, opportunities exist for all comers.

Context

The aPaaS market is formed by vendors aiming to provide customers with a cloud platform for the development and execution of cloud-based applications, services and business solutions. The enterprise aPaaS market targets subscribers in midsize to large business settings that are building new software-based solutions, but are constrained by their associated governance requirements, policies and regulations.

This research covers only the vendors with aPaaS offerings aimed at enterprise customers; however, within this category, vendors still differ in multiple dimensions in the way they envision enterprise realities, requirements, opportunities and best practices in cloud computing:

Developer experience:

‣ (see "Choosing an aPaaS: High Productivity, High Control or Both?")

High-productivity. A model-driven graphical development environment, typically producing metadata that is interpreted at runtime. Some programming is possible, but the core of the application is designed graphically and is interpreted at runtime. Typically proprietary and limited to the more common application design patterns. Typically suitable for LOB and citizen developers, but also useful for many simpler projects within central IT. Ensures a certain degree of application cloudiness. Typically not suitable for unique or advanced application designs.

High-control. A programming environment based on established on-premises models (such as Java, Ruby, .NET) that allows for the design of more unique and advanced applications than the high-productivity offerings, but also imposes greater responsibilities on the programmer in creating cloud-compatible applications (for stateless, scalable, service-oriented, and instrumented-for-management capabilities). Ease of use for the developers is similar to noncloud/on-premises platforms.

Model of elasticity:

Shared hardware. Multiple tenants may share the resources of a physical machine, but each VM is exclusively dedicated to one tenant. The increment of elasticity is the whole VM image. Isolation is implemented by the virtualization hypervisor. Elasticity is implemented by additional control software. This is a relatively coarse model with a modest degree of resource sharing; however, the less sharing, the more assured is the tenant isolation.

Note that an increasing number of aPaaS providers are offering the option of dedicated VM, usually at a higher price point, for more advanced isolation. This is usually referred to as "dedicated" aPaaS.

Shared OS. Multiple tenants share an instance of a virtual or physical server OS, each isolated via OS containers. The increment of elasticity is an instance of an OS container, which is more lightweight than a whole VM — making elasticity more fine-grained and more responsive to changing demands (an OS container can be instantiated faster than a VM and can therefore be triggered in response to smaller changes in demand). Isolation is implemented via OS containers; elasticity is implemented by additional control software (a PaaS framework).

Shared container. Multiple tenants share an instance of an application container. The increment of elasticity can be a thread, a segment of real memory, a priority level or a database connector. Fine-grained elasticity is the most efficient in responding to changing demands and in the density of resource utilization. Tenant isolation and resource elasticity are implemented inside the application platform container; however, the more sharing, the harder it is to ensure tenant isolation.

Scope:

Public. The aPaaS services are operated by the provider in the data center network of the provider's choice or from a selection managed by the provider. Software that executes the application is unavailable for review or change and is fixed and versioned exclusively by the provider (with the subscriber having some control over the timing of updates). The customer operates in logical isolation from other tenants, but shares some physical resources — reducing costs and improving the elasticity of the environment.

Hybrid. The provider of the public aPaaS also offers the software that enables its public service — as a software product that is deployed and managed on-premises at a data center of the buyer's choice. The software may not be 100% the same, but offers sufficient portability and interoperability for a homogeneous hybrid application PaaS. The vendor may retain a degree of control of the versioning of the software even if it does not control its day-to-day operations.

Private. Some vendors (such as Apprenda) offer only the PaaS framework or cloud-enabled application platform (CEAP) software. Such vendors are not service providers and are not covered in this research, but their products should be evaluated along with the hybrid providers' software if the plan is to develop a private PaaS.

Virtual private (Dedicated). The aPaaS services are operated by the provider in the data center network of the provider's choice. Software that executes the application is unavailable for review or change and is fixed and versioned exclusively by the provider (with the subscriber having some control over the timing of updates). The provider allocates exclusive space to the customer— thereby reducing or eliminating any resource sharing, but meeting the customer demand for stronger isolation.

Target audience in the enterprise:

LOB developers. aPaaS targeting LOB citizen developers must offer high-productivity graphical design and easy reference to application data and services. They offer high-productivity, model-driven design of UIs. Typically, LOB developers use these tools in conjunction with a SaaS solution or via prebuilt accelerators or components.

Central IT developers. aPaaS targeting enterprise IT organizations must support development of one-of-a-kind application services — some would choose high-productivity for rapid results, while others would opt for high-control, more-advanced programming opportunities. The applications are the tenants of the aPaaS — sharing and competing for the resources between them. Often, the applications have no tenants of their own and are deployed in the cloud for reasons other than multitenancy (delegating system management, time to results, attractive tools or pricing); however, in some cases, custom IT applications may be used by isolated departments or branches within the subscriber organization, and those become tenants of the application and subtenants of the aPaaS.

In a bimodal IT world, the high-productivity aPaaS may be required where central IT is looking for fast returns on investment, and high-control aPaaS may be needed in the LOBs as some of them become more technically skilled. The divide between the LOBs and central IT is becoming less pronounced as cloud services that recognize the bimodal nature of modern IT deliver new solutions.

SaaS ISVs. aPaaS targeting SaaS ISVs (a key customer category for aPaaS vendors) must provide full support of subtenancy, because the objective of the ISVs is to sell their application services to independent customers (their tenants). Successful SaaS ISVs will have thousands of tenants of their own. Support of subtenancy for ISVs includes support of tracking and billing per subtenant, version control of the application that is seamlessly delivered to subtenants, management that allows the ISV to control all subtenants (including scaling, failover, backup/restore, noisy neighbor control and security), and the self-service management that is offered to subtenants. In other words, the experience of a subtenant must, within its scope, be the same as the experience of the tenant (the ISV) itself.

Pricing model:

Free. Usually limited to developer (nonproduction) usage with resource restrictions, often using the lowest-cost service platform (for example, a multitenant platform when production might be dedicated). Nonetheless useful for education and evaluation.

Fixed. Priced in proportion to the number of registered users (with some established resource boundaries, such as the number of data objects, bandwidth or storage, with variable overrun costs). Resource ceilings may be tiered with different price levels. Users that are significantly under the use thresholds are paying a premium for the predictable budget exposure, and relief from the burden of capacity planning and continuous use tracking. Minimal or no system administration of the service is required of the subscriber.

Variable. Priced in proportion to use of physical resources (models and techniques of price calculation differ, but all include some floor and ceiling thresholds). Users have an opportunity to align their costs to their patterns of use — at the cost of having to engage in continuous use tracking and capacity planning. Users that have a steady 24/7 demand pay a premium for the flexibility that they do not utilize. Some system administration of the service by the subscriber is essential.

Prepaid credit. The subscriber makes a dollar deposit into a provider-held "bank." The use of all provided cloud services is charged to the bank in proportion to resource use (a variable model; see above), but the subscriber experiences the costs as a fixed schedule of deposits into the bank at regular established intervals. Adjustments to the deposit amount are made, as needed, to match resource consumption, but are expected to be relatively rare. This model offers a combination of both fixed and variable pricing, and also enables the subscriber to take advantage of all current and future capabilities offered by the provider without negotiating contracts separately for each new feature.

The general PaaS architecture model also applies to aPaaS platforms. This model is composed of a stack — from application to infrastructure (see 1 to 4 below). The aPaaS market provides various platform services and different capabilities for the PaaS framework, running on various infrastructure options.

1. **Applications.** The services that provide business functionality. These could also be "headless" in that they are business services provided for other applications to access.

2. **PaaS Platform Services.** The services that provide platform and middleware functionality to the applications. Typically, these include UI, mobile and database services in aPaaS. Options may include specialist databases (for example, NoSQL and in-memory data

services), BPM and decision-engine services, and integration features (such as access to specialised data services in SaaS or corporate REST-based services).

3. **PaaS Framework.** The software that enables the cloud capabilities for platform services. The PaaS framework may itself utilize certain platform services (such as UI services for administration of Web pages). It consists of framework administration, developer services, runtime services and resource management. It could be vendor-specific or based on a PaaS framework such as OpenShift (Red Hat), Cloud Foundry (Cloud Foundry Foundation) or Apache Stratos. For high-control aPaaS there is also the developer service of containerization: using container services such as Docker to provide continuous integration/continuous delivery (CI/CD).

4. **System Infrastructure.** This might include server OSs, VMs and IaaS (note that the PaaS framework handles resource management for tasks such as scalability and elasticity; how much and how this is achieved vary considerably between PaaS offerings).

Users are advised to establish where an aPaaS offering belongs in relation to these categories when evaluating and contrasting vendor candidates. Although a given project may be more sensitive to some of these categories than others, all will have an impact on the overall experience of the subscriber utilizing a selected service. Understanding this impact in relation to the project objectives is the responsibility of the buyer, and should not be delegated to vendors or advisors: the consequences of a wrong choice can span the spectrum from negligible to severe.

Market Overview

The enterprise aPaaS market continues to develop. PaaS remains the smallest of the three major cloud market categories at $4.7 billion in 2015, with IaaS ($16 billion in 2015) and SaaS ($31 billion in 2015) being the other two. Within the PaaS market, aPaaS is the biggest sector ($1.6 billion for 2015. Although we identify current Leaders in this research, the long-term, sustained leadership in the market remains open to new players. New vendors continue to appear, with some SaaS providers productizing the platform underlying their SaaS offering, and some vendors creating aPaaS by cloud-enabling their on-premises application platforms. Some technology startups and IaaS specialists are introducing innovative alternative platform technologies. Most major IT vendors (such as Oracle, SAP and IBM) have now entered the market as a strategic business objective, often in support of their SaaS businesses.

Users are advised to be prepared for change, including discontinuities: in the past year, Dell has acquired EMC, and therefore Pivotal Software; Cloud Control has left the market; and Hewlett Packard Enterprise's Helion Public Cloud was shut down. The best user adoption model therefore continues to be for those projects seeing an ROI within two to three years — in case a new prevailing approach to cloud application design or a new market leadership for your requirements emerges during that time frame. Your organization's commitment to the aPaaS market should be strategic, but adoption of specific vendors and technologies in 2016 should be tactical.

Users can come to aPaaS from first adopting SaaS or IaaS, or aPaaS may be their first PaaS experience. SaaS customers look to aPaaS to establish differentiation through customization and extension of generally available SaaS capabilities, understanding that aPaaS is the route to custom or internal cloud-based business services. IaaS customers look to aPaaS to improve DevOps productivity and to allow the IT organization to concentrate on differentiating business

solutions, instead of the health of the enabling technology or desirable but standardized capabilities such as high availability and elasticity. More visionary users recognize that aPaaS offers an opportunity to create unique cloud solutions (unlike the generally available SaaS), while avoiding the burden of developing custom cloud capabilities (per the use of plain IaaS). The rate of adoption of aPaaS is growing and so is the maturity of the offerings.

Some of the key trends in the aPaaS market include:

The aPaaS market remains under construction — new versions of Cloud Foundry, OpenShift, and Azure App Service have continued to be built out, after previous substantial internal design changes. This trend is likely to continue during the next few years as new entrants come into the market and established vendors reinvent their products, architectures and business goals.

The IaaS versus aPaaS tension is edging to a resolution, though a lot of confusion remains. The integrated offerings from Microsoft, Google and others position IaaS and PaaS capabilities as a continuum of integrated options. IaaS+ offerings such as Amazon AWS Elastic Beanstalk offer even more control than high-control aPaaS, but require more work to deliver equivalent aPaaS benefits.

The aPaaS versus SaaS divide is narrowing as more PaaS providers offer prebuilt business logic frameworks (or libraries) with their development environments — to improve developer productivity — and in the process advancing their PaaS to PaaS+.

Ecosystems and libraries of crowdsourced and vendor-provided accelerators are evolving around aPaaS offerings. The greatest impact in the formation of a components ecosystem will come from the adoption of Docker by most of the leading aPaaS providers, including Microsoft, IBM, Google and Red Hat.

Traditional on-premises platforms are in the process of being upgraded or redesigned to be cloud-ready, some edging to private aPaaS and others to public and hybrid aPaaS. Increasingly, cloud-style platform technology — with its higher density of resource consumption, greater agility in scaling, and productivity — will become ubiquitous on- and off-premises.

Comprehensive multifunctional PaaS offerings are becoming a reality, ushered in by both emerging PaaS offerings and improving business execution by PaaS megavendors. This is quite different from the older architectures where an aPaaS stack was a separate offering from an iPaaS or database PaaS (dbPaaS).

New forms of PaaS continue to emerge, driven by new use cases. Recent examples include business analytics, stream processing and IoT support. Some of these can be considered as extensions to aPaaS: Salesforce IoT Cloud is delivered on Heroku, and SAP IoT is delivered on SAP HCP.

API management becomes a significant concern of IT organizations and is appearing in aPaaS offerings that have a strong focus on SOA, either as embedded services (such as on SAP HCP and TrackVia) or via third parties.

Open source has become more common in cloud computing than it is on-premises. While the aPaaS market lacks official de jure (legal) standards, many open-source technologies act as de facto (actual) standards. Linux, OpenStack, Cloud Foundry, Docker, Kubernetes, and polyglot languages and frameworks (such as Node.js, Ruby on Rails, Java and Tomcat), plus Redis and MySQL, are just some examples.

Bimodal IT creates new demands for high-productivity aPaaS offerings targeting LOB/citizen developers. Some aPaaS products already offer high productivity alongside high control (Salesforce), with others expanding to that capability in their roadmaps.

The IoT pushes stream processing, event processing, real-time analytics, Web-scale, in-memory computing, real-time context-aware decision support and other advanced innovations to the center of aPaaS vendor technology investments. Note, however, that much of the IoT-specific processing can happen locally, before the events/data reach a public PaaS.

Midsize businesses embrace public PaaS as the best of all worlds. Advanced technology they can't manage (or pay for) on-premises is available as a public PaaS at a cost they can afford, and is paired with greater productivity, agility, efficiency and access to continuous innovation.

Public aPaaS offerings challenge traditional middleware for mainstream enterprise projects and not only for experimental, cloud-centric initiatives. The advantages of higher productivity and efficiency and new capabilities make aPaaS a mainstream technology option.

Appendix

Many vendors in the public cloud platform market do not appear in this Magic Quadrant because they did not meet the thresholds for revenue or count of paying customers, have not yet implemented sufficient cloudiness, or did not sufficiently meet the requirements of enterprise-style software projects by 1 September 2015. A sample of the vendors and offerings in this category is included in Table 3.

Table 3.   Sample of Other aPaaS Vendors

High-Control aPaaS**	High-Productivity aPaaS**
Acumatica	AgilePoint
AWS Lambda	appeleon
Apprenda	AppPoint
Asteor	appsFreedom
CenturyLink	Betty Blocks
Corent	Fhoster
Deezze	IS Tools
Ekartha	K2
fortrabbit	KeyedIn

High-Control aPaaS**	High-Productivity aPaaS**
Hewlett Packard Enterprise (HPE) Helion	Lianja
Jelastic	Simplicité Software
KidoZen	Thinkflow
LexaCloud	TrackVia
Manjrasoft	WaveMaker
NTT Data — intra-mart	Wayfast
Pivotal	WebRatio
WSO2	
"Choosing an aPaaS: High Productivity, High Control or Both?" aPaaS = application platform as a service.	

Source: Gartner (March 2016)

We recommend that you examine these vendors' offerings in addition to those evaluated in this Magic Quadrant. Many may have sufficient functionality (or may have advanced since the inception of this research) to meet your specific cloud aPaaS requirements.

Acronym Key and Glossary Terms

aPaaS	application platform as a service
AWS	Amazon Web Services
BPM	business process management
CI/CD	continuous integration/continuous delivery
PaaS	platform as a service
IoT	Internet of Things
iPaaS	integration platform as a service
ISV	independent software vendor
QoS	quality of service

SOA	service-oriented architecture
VM	virtual machine

Evidence

Gartner surveyed the customers of aPaaS vendors during 4Q15 to ascertain levels of use and satisfaction with various aspects of the aPaaS offerings. This material was used to provide survey data for the Vendor Strengths and Cautions sections included in this Magic Quadrant. Additional data was provided by the vendors themselves, through standardized questionnaires and briefings. Beyond these specially arranged sources, vendor ratings are based on insight collected by analysts during the course of our work with users of various aPaaS offerings.

Evaluation Criteria Definitions

Ability to Execute

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

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

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

Market Responsiveness/Record: Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.

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

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

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

Completeness of Vision

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

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

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

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

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

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

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

Geographic Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.

(http://gtnr.it/1KsfgQX)

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