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Magic Quadrant for Advanced Analytics Platforms

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Predictive analytics and other categories of advanced analytics are becoming a major factor in the analytics market. We evaluate the leading providers of advanced analytics platforms that are used to build solutions from scratch.

Market Definition/Description

Gartner defines advanced analytics as, "the analysis of all kinds of data using sophisticated quantitative methods (for example, statistics, descriptive and predictive data mining, simulation and optimization) to produce insights that traditional approaches to business intelligence (BI) — such as query and reporting — are unlikely to discover."

Organizations adopt advanced analytics in a number of different ways. The use of advanced analytics platforms is one approach and constitutes the market evaluated in this document. The two most common alternative approaches are:

- To work with advanced analytics service providers (such as Accenture, Mu Sigma, or Opera Solutions), whose employees use either commercial or proprietary analytics tools to deliver insights to the organization.
- To deploy, either on-premises or through SaaS, packaged analytics applications that target specific business domains (such as insurance fraud detection or retail merchandise planning).

Each of these alternative approaches represents a series of discrete markets and is described in other Gartner research (for example, for a decision framework regarding these alternatives, see "An Eight-Question Decision Framework for Buying, Building and Outsourcing Data Science Solutions"), but not included in this evaluation. An advanced analytics platform provides a full suite of tools for a knowledgeable user to perform a variety of analyses on different types of data. In today's market much of this analysis is predictive in nature, although elements of descriptive analysis are not uncommon (see Note 1). While these capabilities remain important, in the future other techniques such as optimization and simulation are likely to increase in importance.

Magic Quadrant

Figure 1. Magic Quadrant for Advanced Analytics Platforms



Vendor Strengths and Cautions

Actuate

Actuate (www.actuate.com) is a traditional BI platform provider based in San Mateo, California, U.S. and Barcelona, Spain. Actuate acquired Quiterian in October 2012, and rebranded it as BIRT Analytics, to extend its

advanced analytic capabilities. BIRT Analytics focuses on customer analytics across a number of industries, including financial services, telecommunications, retail/e-commerce and healthcare.

Strengths

- While established in BI, and with a strong focus toward data visualization, Actuate is in the early stages of providing a mature advanced analytics platform — though its acquisition of Quiterian indicates its commitment to this market.
- Quiterian's region of origin is Spain — for Spanish clients this product may have several strong points such as localization and local experts. (BIRT Analytics also has customers in North America, the U.K., France, Russia and Latin America.)
- Customer references cited high levels of satisfaction with the product's capabilities (see Note 2) for data access, visualization and exploration/discovery, data filtering and manipulation, advanced descriptive analytics, and user experience.
- Customer references cited no significant problems with the upgrade experience.

Cautions

- Feedback from customer references indicates strained vendor relationships. An unusually high proportion of product problems were reported as "not yet resolved," little credit is given to Actuate for factoring customer input into the product road map, and opportunities to network with other customers were poor. Overall, willingness to recommend Actuate for advanced analytics was very low.
- Customer references cited low levels of satisfaction with the product's capabilities for predictive analytics, analytical business use cases, delivery, integration and deployment, platform and project management, and performance and scalability.
- The product has a fairly weak UI, as it doesn't allow visual composition (see Note 3) of the workflow.

Alpine Data Labs

Alpine Data Labs (www.alpinenow.com) is based in San Mateo, California, U.S., and offers an analytics platform with a focus on analyzing big datasets by running analytic workflows natively within existing Hadoop or other parallel platforms. Alpine also offers a strongly collaborative approach to predictive analytics to assist with model development and reuse. The company has grown rapidly in a variety of industries.

Strengths

- Alpine's unique selling point is its scalability due to the tight integration with Hadoop.
- It also features a browser-based, state-of-the-art visual composition UI, which caters to the novice data scientist and business analyst.
- Alpine was one of the strongest vendors in incorporating customer input into the product road map and, overall, had very high levels of customer satisfaction.
- Alpine customer references cited data access, user experience, and performance and scalability as particular strengths for the product, as well as a high degree of product reliability.

Cautions

- Alpine clearly still lacks breadth and depth of functionality when compared with the Leaders.
- Due to its small size, Alpine struggles to establish significant visibility for itself. As larger vendors increase their focus on this market and develop their "big data" stories more fully, this will pose an increasing challenge to Alpine's ability to succeed.
- Customer references cited visualization and exploration/discovery, and platform and project management as areas of (relative) product weakness.

Alteryx

Alteryx (www.alteryx.com), based in Irvine, California, U.S., provides a data-blending and advanced analytics platform that allows analysts to blend internal, third-party and cloud data, and then analyze it using spatial and predictive tools. This is done in a single workflow, with no programming required. Alteryx is particularly strong in the retail and communications industries.

Strengths

- Alteryx has solid offerings geared toward customer analytics and location intelligence and provides a modern UI with drag-and-drop functionality for the R language, and scalable performance through its partnership with Revolution Analytics.
- Alteryx had one of the highest levels of overall customer satisfaction and also received positive feedback for its user conferences.
- Alteryx was most frequently selected by customers based on ease of use and speed of model development.
- Alteryx's customer references cite high levels of satisfaction with the data access and the data filtering and manipulation components of the product.

Cautions

- Alteryx's solution is targeted at line-of-business analysts, rather than traditional data scientists whose needs Alteryx may not be able to support — although its integration with Revolution Analytics may offer something of a remedy for this situation.
- Alteryx's references cited one of the highest frequencies of problems with product reliability and the upgrade process.
- Customer references cited visualization and exploration/discovery, and platform and project management as two areas of (relative) product weakness.

Angoss

Angoss (www.angoss.com), based in Toronto, Ontario, Canada, has a long history of advanced analytics in its KnowledgeSEEKER decision tree product. Angoss focuses on three main markets — risk analytics, marketing analytics and CRM analytics — with its largest customer base in financial services.

Strengths

- KnowledgeSTUDIO is a fairly mature, easy-to-use offering with a reasonable breadth and depth of analytic functions.
- Angoss received positive feedback from clients for incorporating input into the product road map, and for the alignment of pricing with the value the clients derive from the product (pricing is on a named-user workstation, client/server or enterprisewide basis; hosted cloud solutions are priced on an annual subscription basis).
- Customer references cite high levels of satisfaction with the visualization and exploration/discovery, predictive analytics and user experience components of the product.
- For analysts who like working with decision trees (or who require them), Angoss is a good fit — with the ability to transform other types of predictive models into a tree format and assign actions to create a strategy.

Cautions

- Angoss has been a long-term competitor in this market, but — despite the popularity of its KnowledgeSEEKER product — has yet to establish a dominant presence in the market. Its recent transaction, to become a private company and improve its access to capital, might help improve its credibility as a stand-alone provider and its appeal as an acquisition candidate.
- The company's product range caters to most needs of data scientists; however, graph analysis, time-series analysis, support vector machines, instance-based approaches, and more advanced functions are not yet supported.
- Customer references cited data filtering and manipulation, simulation, and platform and project management as areas of (relative) product weakness.

FICO

FICO (www.fico.com), based in San Jose, California, U.S., was a pioneer in credit scoring, but has broadened across a range of other domains with a focus on decision management and operationalizing analytics. FICO has a focus on banking, insurance, retail and healthcare, but also has a growing presence in other industries.

Strengths

- FICO's experience and reputation in credit scoring bring it considerable credibility in this market. The emphasis on ensuring value from the analytic work — through its emphasis on decision making — also positions it well for the future.
- FICO was frequently selected based on the user's ability to build models with exceptional accuracy, to model efficiently against wide datasets (with lots of variables) and for its support for collaboration between business users and the analytics team.
- FICO had good levels of customer satisfaction and high levels of product reliability.
- Customer references cite high levels of satisfaction with the optimization and performance and scalability components of the product.

Cautions

- FICO's functional breadth and depth for most analytic categories (besides optimization) is limited compared with offerings from the Leaders.
- Reference clients indicated that the company's pricing model does not reflect the way FICO's platform delivers value to their organizations. (The current model is licensed, on-premises software priced on a per-seat basis; FICO is also adding cloud-based subscription and usage-based options.)
- The product has limited visualization and exploration/discovery capabilities and was rated low by customers in this area, along with data filtering and manipulation.

IBM

IBM (www.ibm.com), based in Chicago, Illinois, U.S., acquired SPSS in 2009 and has evolved its portfolio so that predictive analytics are accessible to multiple user types and skill levels. Best known for its Statistics and Modeler (data mining workbench) products and solutions, IBM SPSS resolves a wide range of challenges related to the analytics of customers, operations, threat and risk.

Strengths

- IBM has devoted considerable corporate emphasis to this product space. For example, the breadth and often depth of IBM's analytic offerings (not just SPSS but also Watson and ILOG) and the successful positioning of them under the corporate Smarter Planet branding.
- IBM was frequently selected based on: speed of model development/ability to build large numbers of models, ease of use and product quality.
- Customer references cite high levels of satisfaction with the data access, data filtering and manipulation, advanced descriptive analytics, predictive analytics, user experience, and the performance and scalability components of the product.
- IBM received high marks for innovation: incorporating R&D such as entity analytics (see Note 4) into SPSS Modeler; and, the recently announced IBM Watson Analytics incorporating IBM's Rapidly Adaptive Virtualization Engine (RAVE) visualization capabilities merged with SPSS algorithms; along with in-memory investments such as IBM Blu Acceleration and integration with continued acquisitions such as Vivisimo.

Cautions

- IBM is working to integrate and align the variety of different analytic capabilities it has developed and acquired. The complexity of this process occasionally results in a lack of understanding, both within IBM and among some of its channel partners, about the product road map.
- IBM's product stack and the individual offerings can make it difficult to use in settings where the required functionality stretches across many discrete product offerings. IBM is evaluating the effectiveness of new bundling options such as predictive maintenance and quality.
- References did not feel that IBM listens to their input regarding product direction, and were consistently negative about the pricing structure (based on users and cores): saying, in particular, that it was neither predictable nor controllable. (The new, simplified license model may address these concerns.)

- Customer references cited simulation as an area of (relative) product weakness.

InfoCentricity

InfoCentricity (www.infocentricity.com), based in Novato, California, U.S., is a private company best known as a specialized provider of predictive analytics for credit risk decisions in the banking industry (it has also demonstrated success in getting its flagship Xeno product to the retail, education and marketing sectors).

Strengths

- InfoCentricity had one of the highest levels of customer satisfaction of any of the vendors surveyed, as well as high scores for product reliability and the upgrade process.
- InfoCentricity was frequently selected based on ease of use, product quality, and the quality of its internal experts.
- InfoCentricity's strategy was built from the beginning on the alignment of product and supporting services — with an emphasis on knowledge transfer as a key element of the services value proposition.
- Xeno customer references cite high levels of satisfaction with the visualization and exploration/discovery, predictive analytics, analytical business use cases, user experience, and performance and scalability components of the product.

Cautions

- Xeno is scorecard-centric and does lack in breadth of functionality (although it provides integrated decision trees, clustering and supporting of variable generation and reporting capabilities), so clients should check if Xeno will cater to their future as well as their current needs.
- InfoCentricity suffers from a lack of awareness outside of the credit risk market and will need to move beyond the perception of being FICO's competitor (many of its executives are ex-FICO) if it is to establish a broader market relevance.
- Customer references cited optimization and simulation as areas of (relative) product weakness.

Knime

Knime (www.knime.com), based in Zurich, Switzerland, offers a free, open-source, desktop-based advanced analytics platform. It also offers a commercial, server-based on-site or customer cloud solution providing additional enterprise functionality. Knime has a presence across a range of industries, but with particular experience in life science, government, education and communications.

Strengths

- The Knime platform supports an extensive breadth and depth of functionality.
- Knime had the joint-highest levels of overall customer satisfaction as well as some of the best scores for customer engagement (conferences and online community).

- Knime was frequently selected based on support for open-source capabilities, ease of use, and license cost (even from customers who subsequently paid license fees). The bundling and pricing of the software is very customer friendly and should also cater not only to the top-tier firms, but also to the midmarket.
- Customer references cite high levels of satisfaction with the data access, data filtering and manipulation, predictive analytics, further advanced analytics, and analytical business use case components of the product.

Cautions

- Despite the large number of installed customers, Knime does not have high visibility in the market beyond the data mining community.
- Knime's company size can affect support for staffing-intensive vendor selection and customer support requests.
- Because of its free desktop solution, it often lacks credibility in the more comprehensive commercial environment.
- Although Knime has a broad range of functionality, simulation is an area of (relative) product weakness.

Megaputer

Megaputer (www.megaputer.com), based in Bloomington, Indiana, U.S., is a privately held software firm and, despite its Russian heritage and a Moscow-based development center, most of its clients are based in North America. Its flagship product is PolyAnalyst, which caters to the broad needs of advanced analytics and has fairly wide industry traction.

Strengths

- PolyAnalyst has good functional coverage and a particularly strong focus on integrating text into the predictive analytics environment.
- Megaputer had high levels of overall customer satisfaction.
- Megaputer was frequently selected based on its ability to support a wide variety of data types (particularly textual data, which it has bundled into its extended PolyAnalyst for Text product offering), ease of use, and the expertise of its internal experts.
- Customer references cite high levels of satisfaction with the data access, data filtering and manipulation, advanced descriptive analytics, and analytical business use cases components of the product.

Cautions

- PolyAnalyst is not currently positioned to cater to the requirements of very advanced data scientists — it lacks extensibility options and will not be able to scope with the most challenging big data demands (its user interface will require significant modernization).
- Megaputer's references were not satisfied with the degree of customer community facilitated by the company through its online forums or customer conferences.

- Customer references cited visualization and exploration/discovery as areas of (relative) product weakness.

Microsoft

Microsoft (www.microsoft.com) is based in Seattle, Washington, U.S., and its predictive analytics capability is embedded within SQL Server. The capabilities can be accessed either directly through SQL Server or through an Excel plug-in that acts as a front end to SQL Server.

Strengths

- The availability of predictive analytics through the widely adopted SQL Server platform gives Microsoft great reach into organizations that can serve as a springboard for future development.
- Microsoft has a sophisticated development team that recognizes the importance of this market. Coupled with its corporate strength, this should ensure sufficient resources are available for Microsoft to execute its ambitious plans for advanced analytics.
- Microsoft was frequently selected based on product quality, the availability of skills, low implementation cost and effort, and alignment with existing data infrastructure investments.
- Customer references cite high levels of satisfaction with the data access, data filtering and manipulation, delivery, integration and deployment, platform and project management, and performance and scalability components of the product.

Cautions

- SQL Server 2012 Analysis Services lacks in breadth and depth, and also usability, for the 13 advanced analytics capabilities when compared with the Leaders.
- Microsoft received the lowest scores of any vendor on its willingness to incorporate customer feedback into future versions of the product, although this may change as Microsoft ramps up for a significant overhaul of the product in late 2014.
- Customer references cited visualization and exploration/discovery, advanced descriptive analytics, predictive analytics and further advanced analytics as areas of (relative) product weakness.

Oracle

Oracle (www.oracle.com) is based in Redwood Shores, California, U.S. Its Advanced Analytics Option (OAA), an optional component of the Oracle Database Enterprise Edition, has been implemented in multiple different geographies and industries and facilitates a range of deployment options — from on-premises and hosted to cloud-based and embedded in applications.

Strengths

- Oracle has the corporate strength to deliver both development and sales and marketing resources to this product line.
- OAA is tightly integrated with Oracle Database 12c and this often brings lots of scalability and simplicity; that is, no need to create extra copies inside a separate analytical data store.

- Oracle was most often selected based on its support for open-source capabilities (R programming language) and alignment with existing data infrastructure investments.
- Customer references cite high levels of satisfaction with the data access, predictive analytics, further advanced analytics (such as text analysis), delivery, integration and deployment, and performance and scalability components of the product.

Cautions

- OAA is database-centric (that is, all data to be analyzed has to be in the database). There are pros and cons to this approach. A database-centric approach eliminates the need to move data out of the data warehouse and into a separate analytic engine. However, advanced analytics can be very workload-intensive, so organizations need to be careful how they manage the modeling and scoring processes to balance system performance with the availability of the data for analysis purposes.
- Customer references cited visualization and exploration/discovery, advanced descriptive analytics, optimization, simulation, platform and project management as areas of (relative) product weakness.
- Oracle references were negative regarding the pricing structure (based on a per-processor fee); suggesting that even though it is not expensive, it does not align well with the way its customers receive value and, in particular, saying that pricing was neither predictable nor controllable.

RapidMiner

RapidMiner (www.rapidminer.com), formerly known as Rapid-I, is based in Cambridge, Massachusetts, U.S. RapidMiner is an open-source, client/server-based solution also available as a commercial solution with the ability to work on larger datasets and to connect to more data sources. The platform derives its extensibility via source-code availability and integration of other open-source solutions (for example, R and Weka).

Strengths

- The RapidMiner platform supports an extensive breadth and depth of functionality, and with that it comes quite close to the market Leaders.
- RapidMiner's references reported good levels of overall satisfaction, a strong user community and consistent incorporation of product requests into future releases.
- RapidMiner was most frequently selected based on ease of use, license cost, and speed of model development/ability to build large numbers of models. A number of templates guide users on the most common set of predictive use cases.
- Customer references cite high levels of satisfaction with the data access, data filtering and manipulation, predictive analytics and further advanced analytics components of the product.

Cautions

- Despite the large number of installed customers, RapidMiner does not have high visibility in the market outside the data mining community.

- RapidMiner struggles to motivate clients — already using the free-to-download version of the product — to upgrade to the commercial version (which includes the ability to work on larger datasets, Web-based reporting, model management, collaboration features and additional deployment alternatives).
- Customer references cited analytical business use cases, and platform and project management as areas of (relative) product weakness.

Revolution Analytics

Revolution Analytics (www.revolutionanalytics.com) is based in Mountain View, California, U.S., and provides an enterprise-grade, multiplatform execution framework and an ecosystem of partnerships to the increasingly popular open-source R language.

Strengths

- Revolution Analytics was early to recognize the rise in popularity of R along with the limitations of R for enterprises, and was first to address these market needs (for example, multiplatform scalability and support) by developing a commercial software product that enhances and extends open-source R.
- Revolution Analytics has high market visibility and sales momentum and tends to be the default choice for organizations without an existing provider seeking an R-based solution.
- Revolution Analytics was most frequently selected based on support for open-source capabilities and the relatively low license cost.
- Customer references cite high levels of satisfaction with the data access, advanced descriptive analytics, predictive analytics and simulation components of the product.

Cautions

- Revolution Analytics is (like R) demanding on the coding skills that are required to make the best use of the platform; however, partnerships (such as with Alteryx) increase the usability of its platform.
- References did not feel that pricing (that is, priced by the number of computing cores on servers, grids and appliances, and by the number of nodes on Hadoop) was predictable or controllable. The company introduced a new pricing structure in 4Q13 to address value consistency.
- Overall customer satisfaction for Revolution Analytics was not strong, although (with the exception of pricing and some issues with product reliability) there were no areas of stand-out poor performance. In late 2013, the company added 24/7 support, additional training offerings and new deployment services to help customers succeed.
- Customer references cited visualization and exploration/discovery, platform and project management and user experience as areas of (relative) product weakness.

SAP

In October 2013, SAP (www.sap.com), which is based in Walldorf, Germany, closed the acquisition of KXEN. The InfiniteInsight product is a sound addition to the SAP stack, which includes SAP Predictive Analysis (PA) and SAP Hana Predictive Analysis Library (PAL).

Strengths

- SAP InfiniteInsight is known for its ability to create many derived variables and quickly home in on the most salient subset of those. This is useful for business analysts, but also enables increased productivity for some data scientists.
- SAP InfiniteInsight was frequently selected based on speed of model development/ability to build large numbers of models, ease of use, and ability to model efficiently against wide datasets (those with lots of variables).
- SAP PA and SAP Hana PAL provide an interface and framework suited to data scientists requiring more scalability and flexibility than is provided with SAP InfiniteInsight.

Cautions

- Until the integration of SAP InfiniteInsight and SAP PA is complete, data scientists will have to switch between these two products in order to have access to all the functionality they need to perform their analysis. SAP is expected to address this in 2014 with a unified release.
- Overall customer satisfaction with SAP was relatively low, and users did not feel the pricing structure aligned with the delivery of value to their organizations (KXEN's pricing structure was changed in December 2013).
- As expected, KXEN's narrow focus on automating the predictive process led customer references to cite simulation, and visualization and exploration/discovery, and InfiniteInsight's data filtering and manipulation, as areas of (relative) product weakness.

SAS

SAS (www.sas.com) is based in Cary, North Carolina, U.S. With more than 40,000 customers and the largest ecosystem of users and partners, SAS has traditionally been the safe choice for organizations seeking an advanced analytics environment. SAS has strength in banking, insurance, business services and government.

Strengths

- The SAS product stack is by far the widest in the industry, only rivaled by the open-source programming environment R — with its thousands of libraries.
- Willingness to listen to customer input, the strength of the user community, and high product scores all helped drive a high level of overall customer satisfaction.
- SAS was frequently selected based on product quality, availability of skills and the ability to model efficiently against wide datasets.
- Customer references cite high levels of satisfaction with the entire spectrum of capabilities, in particular with the data access, data filtering and manipulation, advanced descriptive analytics, predictive analytics, and further advanced analytics components.

Cautions

- The SAS product stack is highly fragmented and often multiple products exist to do one thing (for example, predictive modeling).

- Given the complexity of some of the SAS products, this is not a choice for the fainthearted. The forthcoming SAS Visual Statistics aims to remedy the situation by becoming a common interface.
- SAS emerged from the reference survey with poor evaluations for both product reliability and the upgrade process, with many customers reporting significant problems (many of them still unresolved).
- Although the pricing structure itself was not a major cause of dissatisfaction, a significant number of survey respondents indicated dissatisfaction with the high cost of SAS compared with other solutions.

StatSoft

StatSoft (www.statsoft.com), based in Tulsa, Oklahoma, U.S., is a privately held software firm, and one of the pioneers in the advanced analytics industry, with a long history in the academic and desktop analytics space. Its Statistica offering has traction in all major industries and regions of the world.

Strengths

- StatSoft has a very wide range of functionality in all categories and meets the functional requirements of advanced analytics very well.
- StatSoft had high levels of overall customer satisfaction, and some of the highest evaluations for product reliability and the upgrade experience of any vendor.
- StatSoft was most frequently selected based on speed of model development/ability to build large numbers of models, license cost, and ability to support a wide variety of data types — including unstructured data.
- Customer references cite high levels of satisfaction with the advanced descriptive analytics, predictive analytics, further advanced analytics, and performance and scalability components of the product.

Cautions

- Although it aspires to reach more business users, the Statistica UI appears old-fashioned — as do some of the visualizations because they follow MS Windows UI standards on the desktop. However, StatSoft does provide UIs with a more contemporary look and feel for domain-specific solutions.
- References did not feel that StatSoft license costs were predictable and controllable. StatSoft attempts to provide clear visibility of some costs based on a commitment to a 20% rate of maintenance fees. References were also critical of the lack of opportunity to interact with other customers at StatSoft-managed conferences and online forums.
- Customer references cited platform and project management as an area of (relative) product weakness.

Vendors Added and Dropped

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

Added

This is the first version of this Magic Quadrant, so all vendors are new.

Dropped

This is the first version of this Magic Quadrant, so no vendors have been dropped.

Inclusion and Exclusion Criteria

To be included in the Magic Quadrant analysis, vendors must meet *all* of the following criteria (see Note 5):

1. Offer advanced analytics functionality as a stand-alone product that can be deployed and used separately from other BI or business applications. This product must be application-neutral (that is, it can support multiple different use cases across the organization), rather than a packaged application for a specific domain or business problem.
2. Offer at least three different approaches to predictive analytics, and three approaches from advanced descriptive analytics, optimization or simulation.
3. Generate at least \$2 million in total advanced-analytics-related software license revenue annually, or have more than 1,000 active deployments.
4. At least 15% of revenue must be collected outside the region of origin.
5. Must be able to achieve a minimum of 15 completed customer survey responses.

Evaluation Criteria

Ability to Execute

Most elements of the ability to execute were rated as of medium importance. The product evaluation scores are considered to be an important aspect of the vendor's ability to deliver, so we rated this with high importance. The sales execution and pricing we evaluated primarily in terms of client opinions regarding the pricing structure (not the absolute cost of the solution), and although significant this was less important in the vendor's overall ability to either remain viable or deliver a robust product. We also rated the operations criteria (mainly evaluations of the product's reliability and the upgrade experience) as of relatively low importance, since (although important) the implications of this can also be reflected in other criteria (for example, product score evaluations) and we did not want to overemphasize its impact by according it a greater weight.

Table 1. Ability to Execute Evaluation Criteria

Evaluation Criteria	Weighting
Product or Service	High
Overall Viability	Medium
Sales Execution/Pricing	Low
Market Responsiveness/Record	Medium
Marketing Execution	Medium
Customer Experience	Medium
Operations	Low

Source: Gartner (February 2014)

Completeness of Vision

Market understanding and innovation we rated as of high importance to the vendor's vision. These criteria evaluate both current levels of vision embedded into the product (innovation) and the vendor's ability to sustain a strong vision into the future (market understanding).

The marketing, sales and offering strategy criteria were included, but with low weighting, to allow vendors we considered to have strong insights in these dimensions to gain recognition for them without, however, allowing these to overwhelm the more important market understanding and innovation criteria that we consider to be the basis of a vendor's vision and its ability to influence the market.

The vertical and industry strategy is a significant issue in the overall advanced analytics market, but is less significant in the platform segment of the market (which is industry-neutral) than in the various application markets (which are often defined by industry).

Business model and geographic strategy were not used as evaluation criteria, because there is little significant difference between the vendors' vision under these criteria that is not already captured in other criteria (such as marketing and sales strategy).

Table 2. Completeness of Vision Evaluation Criteria

Evaluation Criteria	Weighting
Market Understanding	High
Marketing Strategy	Low
Sales Strategy	Low
Offering (Product) Strategy	Low
Business Model	Not Rated
Vertical/Industry Strategy	Not Rated
Innovation	High
Geographic Strategy	Not Rated

Source: Gartner (February 2014)

Quadrant Descriptions

Leaders

Leaders are those vendors with a strong and proven track record in the market that are also likely to influence the market's broader growth and direction. Leaders are suitable vendors for most organizations to evaluate. They should not be the only vendors considered in an evaluation process, but at least two to three are likely to be included in the shortlist of five to eight vendors that organizations consider.

Challengers

Challengers tend to fall into one of two categories. They are either long-term market competitors that need to revitalize their vision to stay abreast of market developments and become more broadly influential, or they are well-established vendors in adjacent markets that are entering this market and have solutions that can reasonably be considered by the majority of their customers. As these vendors prove that they can influence the broader market, they may eventually become Leaders.

Visionaries

Visionaries are usually smaller vendors that embody the trends that are shaping, or will shape, the market. They represent an opportunity for some organizations to skip a generation in the use of technology in the market, or provide some compelling capability that will offer competitive advantage as a complement or substitute for existing solutions. As Visionaries mature and prove their ability to execute over time, they may move to eventually become Leaders.

Niche Players

Niche players also fall into one of two categories. Some niche players are "Visionaries in waiting;" they have some degree of vision (often internally generated), but are struggling to make that vision compelling to the market or to develop the track record for continual innovation that will move them across to the Visionaries quadrant. Other niche players are "Challengers in waiting;" they are often vendors from adjacent markets that are still maturing their solutions in this domain. Their product strength and track record is not quite enough to make them a safe default choice for their existing customers (the attributes of a Challenger), but if they continue to develop the product and demonstrate success they are likely to become Challengers.

Context

Existing users of advanced analytics platforms should begin a process of re-evaluating their options six to nine months before their current software contracts expire. Even organizations that are satisfied with their current provider should consider whether introducing another platform will deliver specific benefits for certain types of analysis (for example, dealing with specific data types, or allowing more rapid model development for highly volatile domains).

Potential users of advanced analytics platforms should look beyond the traditional market leaders. Although these vendors remain realistic options, many of the other providers represent compelling options for organizations with particular requirements and the accelerating evolution of this market will make it likely that some of the traditional vendors will struggle to keep pace with the innovation of newer entrants.

Market Overview

Overall, the advanced analytics market is estimated at \$2 billion (by Gartner) across a wide variety of industries (financial services, retail and e-commerce, and communications are probably the largest, although use cases exist in almost every industry) and geographies (North America and Europe are the largest markets, although Asia/Pacific is also growing rapidly).

This market has existed for over twenty years, and some have considered it to be relatively stable and mature; a state of affairs that, if it was ever true, is no longer so as the concept of big data has not only accelerated interest in the market but also posed significant disruption to it. The following are key disruptive trends in this market:

- Growing interest in applying the results of advanced analytics to improve business performance is rapidly expanding the number of potential applications of this technology and its audience across the organization. Rather than being the domain of a few select groups (for example, marketing, risk), every function now has a legitimate interest in this capability.
- The rapid growth in available data, particularly new sources of data — such as unstructured data from customer interactions and streaming volumes of machine-generated data — require greater levels of sophistication from users and systems to be able to capture their full potential.
- The growing demand for these types of capabilities is outpacing the supply of expert users, requiring significantly higher levels of productivity from skilled users as well as increasing the demand for "non-data-scientist-friendly" tools.

Evidence

Information for this report came from:

- A survey completed by each vendor answering specific questions about corporate attributes and positioning.
- A completed RFP from each vendor providing a breakdown of product functionality.
- An evaluation of the instruction manuals from selected vendors to validate functionality.
- A series of briefings and demonstrations by the vendors to Gartner analysts.
- A survey completed by 591 organizations regarding their experience of working with the vendors' products. At least 15 references were completed for each vendor to provide a reasonable sample size. The list of surveyed organizations was obtained by a combination of vendor-provided references and Gartner clients who had expressed a willingness to be surveyed as part of the Magic Quadrant process.
- Ongoing customer interactions between Gartner analysts and Gartner clients making selection decisions about their evaluation criteria, and opinions about how successful vendors were in meeting those criteria.

Note 1 The Evolution of Magic Quadrants for Advanced Analytics and BI

For the past eight years, Gartner has published a Magic Quadrant about BI and analytics (though the report name has evolved over the years). These Magic Quadrants have evaluated vendors across the entire spectrum of BI and analytic capabilities, but have focused primarily on vendors' ability to provide traditional query and reporting (descriptive) capabilities. Over the past few years, data visualization and predictive and prescriptive analysis have become more important to organizations and this has been reflected in the vendors evaluated and their positions in the Magic Quadrant. In 2013, the analytics research team decided that the scope of the Magic Quadrant had grown to cover multiple markets; although the decisions are sometimes connected, the evaluation process most clients follow for "traditional" BI capability is now separate from their evaluation of "advanced" analytic capability. Therefore, Gartner's Magic Quadrant for BI and Analytic Platforms encompasses all four categories (that is, descriptive, diagnostic, predictive and prescriptive), but allocates more weight to the descriptive and diagnostic components; while the Magic Quadrant for Advanced Analytic Platforms includes the diagnostic, predictive and prescriptive components, but has most weight attached to the predictive element.

Note 2 Categories of Functionality

Vendors were evaluated by the analysts, and in the customer survey, on the following 13 categories of functionality:

1. **Data Access** — Code-free basic data integration; advanced data integration; service-oriented architecture (SOA), Web data integration; basic extraction, transformation and loading (ETL) functionality; advanced ETL functionality; enterprise application access; data refresh; supported (for example, multimedia) data types; data lineage; data mashup; geospatial data and consumer data integration; geocoding; limitations.
2. **Visualization and Exploration/Discovery** — Basic charts; advanced visualization chart types; export of visualizations into reports and Web-portals; advanced visualization GUI features; univariate and bivariate statistics; statistical significance testing; online analytical processing (OLAP), visual interaction and exploration.

3. **Data Filtering and Manipulation** — Binning and smoothing; feature generation dimensionality reduction and feature selection; filter and search, rotation, aggregation and set operations; transformations; signal preprocessing; custom mappings; dataset partitioning.
4. **Advanced Descriptive Analytics** — Clustering and self-organizing maps; affinity and graph analysis; conjoint and survey analysis; density estimation; similarity metrics.
5. **Predictive Analytics** — Regression modeling; time-series analysis; neural nets; classification and regression trees; further rule-induction techniques; support vector machines; instance-based approaches; Bayesian modeling; ensembles and hierarchical models; import, call and development of other predictive models; measures of fit; testing of predictive models.
6. **Optimization** — Solver approaches; heuristic approaches; design of experiments.
7. **Simulation** — Discrete events, Monte Carlo simulation; agent-based modeling.
8. **Further Advanced Analytics** — Basic text analytics; text processing; vocabulary, language and ontology management; advanced text analytics; multimedia analytics; geospatial analysis; financial modeling and econometrics; signal processing and control.
9. **Analytical Business Use Cases** — Marketing; sales; risk management and quality management; others.
10. **Delivery, Integration and Deployment** — Integration; write-back; Web deployment and info graphics/dashboards; portal support; embedded delivery.
11. **Platform and Project Management** — Metadata management; model management; model licensing issues; decision management; scripting and automation; objects reuse; multiuser capabilities; debugging and unit testing; runtime optimization; audit and logs; data encryption; client deployment; extensibility.
12. **User Experience** — Ease of use; documentation; guidance; wizards and contextual aids; user community; third-party applications.
13. **Performance and Scalability** — Big data, in-memory, in-database techniques; data volume scalability; algorithmic efficiency; real-time data and streams.

Note 3 Visual Composition Framework

Visual composition refers to a tool's ability to allow for graphically creating building blocks and connecting them with each other; that is: data import, data preparation, model building, testing, and export.

Note 4 Entity Analytics

Entity analytics is the detection of like and related entities across large, sparse and disparate collections of data.

Note 5 Other Significant Vendors Not Included in the Magic Quadrant

Although significant, these vendors were not included in the final Magic Quadrant because they did not meet all of the required criteria; however, they will be included in other research to publish the findings from the reference survey.

The open-source solution R was not included in this evaluation because there is no corporate presence behind it that can be used to evaluate Magic Quadrant criteria such as market understanding and innovation, or market responsiveness and customer experience. Many of the vendors in the Magic Quadrant have integrated R into their solutions, making it more complementary than a direct competitor in many respects. Revolution Analytics is the closest to a commercial organization behind R, and was included in the evaluation. Other open-source solutions that do have corporate backing — such as Knime and RapidMiner — were included in the evaluation.

- **Ayasdi** — Founded in 2008 at Stanford, California, U.S. and now based in Palo Alto, California, Ayasdi's Iris uses topological data analysis (network or graph analysis) to enable business users to automatically find hidden insights in large, complex datasets. Iris can ingest a range of structured and unstructured data sources, apply hundreds of algorithms to the data to automatically discover relationships across entities and nodes, and provides capabilities to visualize the data and interact with it at different resolution levels to drill into subsets of the network to expose patterns in extremely dense and highly dimensional data. The product also has open APIs, to operationalize findings in business applications or for use with existing BI tools. Ayasdi customers use this product for a broad range of fraud detection, process optimization, risk identification and customer segmentation.
- **Fuzzy Logix** — Is a fairly recent startup, with its founders coming from the investment banking area. Fuzzy Logix' premier product is the advanced analytics platform DB Lytix, which offers a wide range of mathematical functions and machine-learning modules. Its reported unique selling point is high-performance analytics processing, which is addressed predominantly by its in-database capabilities (for example, Teradata, Netezza, Sybase IQ, SQL Server and MySQL) and its optional graphics processing unit (GPU) capabilities (for example, Tanay GPU analytics).
- **i4C Analytics** — Is a privately held advanced analytics vendor with a growing client base of European companies. It offers a single platform (applications configuration environment) that supports two different approaches: an advanced visual modeling approach for traditional data scientists; and an automated modeling approach for business users and part-time analysts. Domain expertise is a key element of i4C's value proposition, with use-case-specific techniques available for target industries (such as utilities, banking, insurance and retail).
- **Predixion** — Builds a number of targeted applications for different industries, particularly healthcare marketing and insurance, on Hadoop (Cloudera, Pivotal and others), Microsoft's SQL Server, and Greenplum, with other engines coming on board over time. Predixion places a heavy emphasis on its go-to-market strategy, with its investor and partner Accenture, for the deployment of models into BI platforms, business applications, workflows, mobile devices and portals. Predixion's Machine Learning Semantic Model packages the necessary data transformations, predictive modeling logic, sampling, validation and model selection to turn a predictive solution into a reusable application. This allows the modelers to reuse their work, deploy it against varied datasets, distribute their expertise, and collaborate while deploying these applications into Web-based and other applications for real-time interventions on business problems.
- **Prognoz** — Is a privately held, Russia-based software and services provider with a strong presence in the public sector, finance and corporate sectors. Its Prognoz Platform product is natively integrated with business intelligence, analytics and visual discovery functionality, and has a particular strength in the time-series analysis, scenario forecasting, target modeling and optimization that is of use for economic modeling and financial system analysis.

- **Vanguard** — Provides business forecasting software and modeling, and simulation software. Forecast Server, designed for business users, incorporates statistical forecasting for use in three main areas: demand planning, financial forecasting and inventory optimization. It can incorporate both historical and expert data sources, with the ability to document and test assumptions and capture uncertainties. It focuses on quality of solution and offers many interactive reports to drill down into many aspects of the forecast model. Vanguard System, designed for modeling experts, allows users to collaborate on complex models and publish them as Web-based applications for business users. Users have access to statistical libraries and functions such as Monte Carlo simulation and Markov simulations.

For further insight into additional vendors in the advanced analytics market, refer to "Who's Who in Advanced Analytics."

Evaluation Criteria Definitions

Ability to Execute

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

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

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

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

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

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

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

Completeness of Vision

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

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

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

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

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

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

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

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

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