



Advanced Analytics: The Hurwitz Victory Index Report

SAS



Marcia Kaufman
COO and Principal Analyst

Daniel Kirsch
Senior Analyst



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Executive Summary

Companies use advanced analytics to discover patterns and anomalies in large volumes of data, and then use this insight to predict the outcomes of future events and interactions. In addition, advanced analytics is used for optimization and complex event processing and analysis. With advanced analytics, your organization can adjust its plans and strategies to become more competitive, minimize potential risk and optimize decision-making in real time. In this report we assess the performance of major providers of advanced analytics solutions and provide insight into how their customers are benefiting from these solutions.

The Hurwitz Victory Index scores vendor performance across four dimensions – Vision, Viability, Validity, and Value. Each dimension measures important components of a vendor’s overall ability to deliver innovative solutions, outstanding customer service, and the business and technical value customers demand. IBM, SAS, SAP, and Angoss all achieved Double Victor status, receiving a Victor rating in both Go to Market Strength and Customer Experience Strength. Pegasystems also received a Victor rating in Go to Market Strength. StatSoft, Revolution Analytics, RapidMiner and Megaputer are Leaders in Go to Market Strength. Megaputer and RapidMiner are Leaders in Customer Experience Strength. The startup, Predixion, is rated a Challenger in Go to Market Strength and Customer Experience Strength.

During the customer research phase of this study we interviewed both business and technical users from many different industries, including manufacturing, banking, insurance, retail, professional sports, and government agencies. There is an extraordinarily large user base of customers utilizing the analytics tools offered by the vendors included in this report. While our interviews focused on customers using advanced analytics in very innovative ways, these customers do not represent all end users. Many of the vendors in this study have customers that have been using one specific product for a long time and have not upgraded to newer offerings. Some of these customers are confused by the major shift in the analytics market and are not prepared to take advantage of new capabilities. There is enormous opportunity in the advanced analytics market as more customers begin to move out of their comfort zone of traditional uses for analytic tools. Some customers may need help getting started; however, we expect to see explosive growth in this market as more companies begin to understand how advanced analytics can improve business outcomes.

Based on our interviews with customers that are leveraging advanced analytics to drive more predictive outcomes for their companies, we found the following conclusions were consistent across all customers:

- Advanced analytics tools are being used to build more complex predictive models more easily and faster than in the past.
- Powerful analytics platforms are helping customers solve a more diverse and increased number of business challenges.

There is enormous opportunity in the advanced analytics market as more customers begin to move out of their comfort zone of traditional uses for analytic tools. Some customers may need help getting started; however, we expect to see explosive growth in this market as more companies begin to understand how advanced analytics can improve business outcomes.



- Companies are analyzing larger and more diverse sources of data, leading to demand for increased computational power, in-memory analytics, and in-database analysis.
- Customers are placing a lot of emphasis on new algorithm development.
- Customers are very loyal to their vendor(s) of choice. As a result, customers can be very frank about a vendor's need to improve customer support, improve data integration or other capabilities and then provide excellent ratings because they get results and really like working with the vendor.
- If they have the budget, customers like to use multiple vendors and select the product offerings that they like best from each vendor.

I. Introduction

The Hurwitz & Associates Victory Index on Advanced Analytics provides insight into customer best practices, market trends, and vendor capabilities in the advanced analytics market. Our focus for this study is both on vendor go-to-market strength and the vendor's strength as rated by their customers. To assess vendor market strength we conducted extensive briefings with the vendors about their products, key innovations and differentiation in the market, go-to-market strategy, and future roadmap. To assess the customer perspective, we surveyed and conducted in-depth interviews with business and data scientist/statistician customers of the vendors included in this study. Our customer research was designed to answer the following types of questions: How are customers using advanced analytics to solve complex problems for their businesses? What are customers looking for from their vendors to help them understand and predict customer behavior and become an analytics led business? How do customers rate their vendor in terms of product capabilities and business value achieved from the solution?

Defining Advanced Analytics

Our research makes it very clear that advanced analytics is rapidly becoming fully integrated into the operations and decision-making processes at companies across many different industries. It is no longer sufficient for businesses to understand what has happened in the past, rather it has become essential to ask what will happen in the future, to anticipate trends, and to take actions that optimize results for the business.

Hurwitz & Associates defines advanced analytics as providing algorithms for complex analysis of either structured or unstructured data. It includes sophisticated statistical models, machine learning, neural networks, text analytics, and other advanced data mining techniques. Some of the specific statistical techniques used in advanced analytics include decision tree analysis, linear and logistic regression analysis, social network analysis, and time series analysis.

The Hurwitz & Associates Victory Index on Advanced Analytics provides insight into customer best practices, market trends, and vendor capabilities in the advanced analytics market.



Companies included in the Victory Index

The 2014 Victory Index on Advanced Analytics is an update to the Victory Index on Predictive Analytics published in 2011. The change in scope from predictive analytics to advanced analytics was made to incorporate evolving vendor offerings and changing customer expectations. Customers and vendors have broadened their techniques and strategies to include text analytics, machine learning, neural networks and other techniques in addition to predictive analytics. Industry leaders and innovators are using a wide variety of techniques to predict customer outcomes, anticipate and correct for machine failures, reduce fraudulent activity and other critical business challenges.

The vendors profiled in this study include Angoss, IBM, Megaputer, Pegasystems, Predixion, RapidMiner, Revolution Analytics, SAP, SAS, and StatSoft (acquired by Dell in Q1 of 2014). While there are many other vendors that participate in this market, Hurwitz & Associates only included vendors that elected to participate in the study and provided us with the information required for our research. Nine of the ten vendors in the 2014 report were also included in the 2011 report. The one addition to the group is Predixion, a company that has been in business since 2009. KXEN and SAP were included as two separate companies in the 2011 study; however, they appear as one company in the current report since KXEN was acquired by SAP in 2014. Pitney Bowes, TIBCO, and Alteryx were invited to participate, but chose not to.

Each vendor participating in the Victory Index study completed an in-depth questionnaire about their products, capabilities, vision and strategy and provided us with customer references. We appreciate the candid conversations we were able to have with these customers on their key business challenges, how they are using analytics to solve these challenges, and the strengths and weaknesses of their analytics vendor. Many customers use more than one analytics vendor and were able to provide insight into why they selected one vendor versus another to implement different aspects of their analytics strategy. In addition to the vendor-supplied references, we also conducted an online survey of analytics end-users to deepen our understanding of the customer perspective on the analytics market.

Advanced Analytics Market is Expanding

The advanced analytics market is very active from an acquisition and venture capital perspective, with approximately \$2 billion invested in analytics startups in 2013. The introduction of new emerging players with solutions that impact the analytics market is accelerating and we expect some of these new companies with deep technology roots will be acquired. Companies with a focus on real-time analysis and innovative solutions in predictive analytics, machine learning, and cognitive computing will be in great demand. The interest may come from traditional analytics vendors that purchase a company because of their expertise in a specific vertical market or from a large software company that needs to round out its technology and become more competitive in analytics. In addition, we expect to see continued innovation from the internal research taking place in the research labs at many of the leading global technology organizations. There are many significant lab research projects underway in cognitive computing, robotics, visualizations, big data and analytics.

The introduction of new emerging players with solutions that impact the analytics market is accelerating and we expect some of these new companies with deep technology roots will be acquired.



Role of Data Scientist

The data scientists we interviewed for our research were very instrumental in providing insight into market trends, evolving customer requirements, and how companies are using advanced analytics. As a group, the data scientists have emerged to hold important positions in their companies. In fact, they have become the “rock stars” of their organization. Many of the data scientists we interviewed were able to look across both the requirements of deep technical users as well as the interests of business users. For example, many data scientists referenced the increasing importance of visualization tools to help them describe the models and trends to business users. Many of the most experienced data scientists have used numerous analytic software solutions over the years. After years of experience and success with specific analytic solutions, data scientists are particular about what they use. They are experts in applying analytic solutions to develop complex models and, when possible, they make sure they get to work with their vendor of choice – even as a condition of employment. In addition, lead data scientists have more time to work on the most complex model development because the business teams are able to manage more of their own analytics projects.

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II. Victory Index Methodology

Hurwitz does a great deal of background research on the market prior to making vendor assessments and providing Victory Index scores. Discussions with vendors, interviews with customers, and analysis of the online survey all contributed to a deep understanding of current trends in the market, customer expectations and trends in customer examples.

The vendors are scored across four dimensions – Vision, Viability, Validity, and Value. Hurwitz & Associates applies a rigorous methodology that uses a weighted algorithm to calculate scores across approximately 50 attributes. Vision measures the strength of the vendor’s strategy and Viability measures the vendor’s sustainability in the market. Value measures the customer’s perspective on the business benefits and overall satisfaction received from the vendor. Validity measures the customer’s view of the vendor’s technical benefits and capabilities. The first two metrics, Vision and Viability, are combined to rate the vendors on Go To Market Strength, The second set of metrics, Validity and Value, are combined to rate the vendors on Customer Experience Strength. The data sources and key metrics used for the analysis are detailed below.

Data Sources

Our evaluation of market trends, key customer examples, and vendor scoring are based on the following sources:

- **Vendor surveys.** An extensive survey was designed to obtain information on each vendor’s vision, strategy, products, financial outlook, and company stability, as well as what the company believes to be its business value. Hurwitz & Associates also conducted briefings with each vendor to further augment and understand this information.



- **Vendor references.** Each vendor supplied 3-5 names of clients who provided input to the Value and Validity metrics. Hurwitz & Associates conducted phone interviews with these customers. Given that many companies use more than one predictive analytics solution, these conversations were also used to understand where one vendor's product provided value in comparison to other vendor solutions.
- **Online Victory Index Survey.** Hurwitz & Associates conducted an online survey to gather direct customer feedback regarding vendor products. We compiled results from approximately 465 companies on how they rated their vendor's products across the customer experience metrics of Validity and Value.
- **Other Sources.** Primary market research conducted on all vendors to assess marketing, technical, and financial performance.

Key Metrics – Vision, Viability, Validity, and Value

The results of the analysis rating each vendor's Vision, Viability, Validity, and Value are shown in two scatter plots – Go To Market Strength and Customer Experience Strength. The four dimensions of Vision, Viability, Value, and Validity are described below. The results of this analysis will be described in detail in Section V.

- **Vision: The strength of the company's strategy.** Attributes evaluated for this metric focus on the company's business and technical strategy. Is the vision realistic given marketplace dynamics? Is the strategy compelling to customers? Does the company have a well-designed road map to support this vision? Vision attributes also include more tactical aspects of the company's strategy such as a technology platform that can scale, well-articulated messaging, and positioning. A key component of this dimension is clarity: it must be clear what business problem(s) the company is solving for which customers.
- **Viability: The Company's sustainability in the market.** Hurwitz & Associates looks beyond revenue and length of time in the market to evaluate relative viability across vendors that range from small private companies to industry giants. Attributes include financial ratios, customer adoption rates, intellectual property, strength of management team, and strength of partnerships. We are also concerned with the vitality of the company in a particular market. For example, a large company might be strong and vital in multiple product areas, but may be lagging in the advanced analytics space because of limited investment or market push.
- **Validity: The technical benefits and capabilities of the product as perceived by customers.** There is a distinction between the positioning of a product and its ability to satisfy customer requirements. Therefore, the Victory Index analyzes how well a company executes on its promises. This part of the Index examines how well the product meets the customer's technical requirements. It includes capabilities such as overall breadth and depth of statistical functionality, the completeness of data types, data preparation and integration capabilities, and the ability to support large data sets. It looks at how deep the functionality is and how effective the product is at evolving based on changing customer requirements.

Hurwitz & Associates conducted an online survey to gather direct customer feedback regarding vendor products. We compiled results from approximately 465 companies on how they rated their vendor's products across the customer experience metrics of validity and value.



- **Value: The business value customers achieve from the product/solution.**
This metric focuses on how satisfied customers are with the vendor's product(s). How do customers rate ease of use and the overall business value of the solution? In addition, this metric considers customer views on the quality of customer support, product innovation, and how the benefits of the solution compared to expectations.

Victory Index research results are detailed below.

III. Market Trends in Advanced Analytics

The advanced analytics market is moving at a rapid pace and much has changed since the publication of the Predictive Analytics Victory Index in 2011. Some of the biggest changes include customer interest in real-time model development and analysis, increased demand for integrated analytics offerings, and the explosive growth in the use of R in analytics environments. Companies continue to explore the use of both large volumes and diverse types of data in their model development. While structured data continues to be extremely important, it is the combination of traditional forms of structured data with newer forms of unstructured data that are causing data scientists to incorporate new approaches into their data modeling process. Analytics vendors are evolving their offerings to meet the statistical requirements of data scientists while at the same time making analytics more accessible to business users. Through our research and user interviews, Hurwitz & Associates identifies the following trends in the field of advanced analytics:

1. Integrated hardware and software platforms

Customers increasingly want hardware that is pre-integrated and optimized to run advanced analytics workloads. These hardware offerings allow users to scale to support big data and advanced analytics while maintaining high levels of speed and reliability. SAP offers an in-memory platform, SAP HANA, which allows customers and partners to run SAP InfitelInsight on hardware that is designed for high-speed and volume analytics. In addition, IBM's PureData System is an integrated system that is designed and optimized for operational analytics workloads. Customers can benefit from the increased reliability, scalability, and speed of an integrated system SAS has partnered with database appliance vendors like Teradata, Oracle, etc. and Hadoop distribution vendors to offer a pre-integrated and optimized platform.

2. Packaging for horizontal and vertical use cases and industries

To accelerate advanced analytics projects, customers are increasingly looking at end-to-end vertical or horizontal solutions. For example, vendors are increasingly offering vertical market solutions for industries such as healthcare, finance, and government as well as horizontal offerings packaged for improving customer service, churn reduction, or fraud prevention. The solutions come pre-integrated with best practices, data preparation automation, and automation for model building, but also allow for some customization. Some examples of this packaging include SAS' customer intelligence platform that gives customers

Analytics vendors are evolving their offerings to meet the statistical requirements of data scientists while at the same time making analytics more accessible to business users.



tools to personalize consumer experience and Pega's extensions for SAP and Salesforce.com. Pega's offering allows customers to run business process management (BPM) and customer relationship management (CRM) analytics from specific data sources.

3. R has become pervasive in advanced analytics

R is an open source programming language for computational statistics, visualization and data. Nearly every vendor in this report has integrated R into their offering to allow the import of R models. The language's estimated 2 million users are enthusiastic, dedicated to R, and are continually making contributions to the project. Sophisticated members of this community are frequently contributing new statistical packages. R appeals to data scientists, statisticians and other sophisticated enterprise users who want the flexibility that a programming language offers. One of the beneficiaries of the increasing popularity of R is Revolution Analytics, which has created enterprise-level support, ease of use and better performance for R. An important component of Predixion's February 2014 release on the other hand tries to give business users access to R's capabilities by allowing users to develop and deploy advanced analytics applications with R through a wizard interface.

4. Python allows more general purpose programmers to perform advanced analytics

The general-purpose open source language, Python, is becoming very important to advanced analytics. There is a growing skills gap between the analytics needs of organizations and the limited supply of skilled statisticians and data scientists who understand how to develop complex analytics models and applications. Python is increasingly becoming an option to address this skills gap. While R is typically the preveue of data scientists, Python has a much larger community of users. While Python does not have the sophisticated deep data analytics and machine learning capabilities that R does, the community is working hard to develop more focused advanced analytics capabilities for Python. IBM and SAS both allow customer to integrate R and Python projects into larger projects.

5. Making analytics more accessible to business users.

There is a shortage of human capital in the advanced analytics space and small-to-mid-sized enterprises often lack the budget to create experienced teams. The shortage of data scientists and the need for more business users to leverage advanced analytics has led vendors to offer more business user friendly features. For example, SAP is focusing on automating the predictive process while Angoss offers a very visual interface for Decision and Strategy Trees. SAS and IBM have released specific offerings aimed at business users. For example, SAS' Visual Analytics offering and IBM's Analytics Catalyst are both aimed at business users.

6. Real time data streams and the Internet of things

The number of devices connected to the web is expanding exponentially and there is an increasing need to run analytics on these data streams while in motion. Performing advanced analytics on streaming data allows organizations to quickly respond to changes in data. For example, an airline can take advantage of streaming data by monitoring a jet engine's key metrics, performing advanced analytics and identifying failure before maintenance crews

R appeals to data scientists, statisticians and other sophisticated enterprise users who want the flexibility that a programming language offers.



notice. Traditionally the airline would rely on manually set thresholds and visual inspections. These thresholds might send an alert if the engine overheated, but will be unable to identify potential problems that result from the occurrence of several normally innocuous factors that, when combined, are problematic. Vendors are responding to the need to provide analytics on real-time data. SAS' Event Stream Processing Engine and IBM's InfoSphere Streams allow users to run analytics while data is in motion.

7. Visualization of data is becoming a business requirement

Visualizations can be very useful to identify hidden patterns in data and to help communicate data analysis and research outcomes to team members, customers, and others. While the visualization of data has been used successfully for many years, it is currently playing an even more critical role as companies leverage big data and advanced analytics. With the push to incorporate streaming data, social media data, machine data, and other large volumes of diverse data into model development and real-time analysis, visualization of data is becoming a critical element of the analysis process. Analyzing enormous data volumes requires a new approach. Analysts have moved beyond the traditional types of data queries that were typical in the past. Advanced visualization can help analysts uncover hot spots that can't be identified with the human eye in data tables, spreadsheets, or basic charts.

Visualizations might be the primary interface for the business users and might be a first step for the data scientist. To help bridge the gap between business users and data scientists, vendors are offering more visualization capabilities. Data visualization capabilities can be customized for different user groups so that they can easily understand them. Some vendors are offering complex visualization products. For example, SAS has an in-memory-based interactive visualization tool, SAS Visual Analytics. IBM's Rapidly Adaptive Visualization Engine (RAVE) is built into SPSS Analytic Catalyst and gives users suggestions for visualizations based on the data set. Other vendors such as Megaputer, RapidMiner and StatSoft rely on visualization capabilities that are built into the core offering.

8. Incorporating big data into the modeling process

Companies recognize the business potential of analyzing big data and want to find new ways to quickly and easily leverage these large and diverse data sets into the modeling process. Many of these companies are looking for a holistic platform that helps to integrate the process of big data analysis with analytics efforts across all areas of the organization. Analytics can no longer be managed solely through a statistics or data analysis department. Analytics needs to be infused in all decision-making activities across all areas of the organization, such as marketing, sales, operations, finance, and human resources. In order to improve customer engagement and optimize outcomes across all these functional areas, companies want to include more varieties of data in their analysis. For example, data types ranging from machine-generated and other sensor data to mobile and financial data feeds, and social media data are typically included in big data analysis. These companies are looking to their vendors to support very large data sets.

Advanced visualization can help analysts uncover hot spots that can't be identified with the human eye in data tables, spreadsheets, or basic charts.



Vendors are responding to this demand for big data and analytics platforms. Many vendors are taking steps to abstract the complexities of big data systems from analyst and line-of-business users, while ensuring that companies have access to the scalability and performance they require. For example, IBM's SPSS Analytic Server helps companies get fast results for predictive analytics of big data.

9. More analytics services are hosted in the cloud

Advanced analytics capabilities have typically been more accessible to large enterprises that can afford the significant expense of these complex solutions. In addition to an increase in the use of affordable open source analytics capabilities, traditional analytics vendors have been looking for new ways to deliver analytics. More and more vendors are using cloud delivery models. Some of these offerings are for specific use cases. For example Angoss, Pega and SAP all offer Salesforce.com applications through the AppExchange to perform analytics on CRM data. Angoss, IBM and SAS also offer more flexible software as Software as a Service (SaaS) that allows customers to do general-purpose analytics with cloud-based software.

10. In-database analytics reduces the need to move data and increases security

When advanced analytics is performed on large data sets, performance, data governance, and security become challenging. In-database analytics allows users to deploy models in the database rather than moving data to an analytics environment that allows analytics to be run more quickly. In addition to performance and efficiency gains, the technology allows for greater security and data governance because the data never leaves the secure database. This can become especially important when advanced analytics is applied to medical records and other personally identifiable information.

Many vendors are offering in-database capabilities for a number of data platforms, including Hadoop. Angoss, IBM, Predixion, RapidMiner, Revolution Analytics, SAS, SAP and StatSoft all support in-database mining. When evaluating a vendor based on in-database capabilities, it is important to investigate its support for the data platform your organization is using. Some vendors only support Hadoop, while others support nearly every common data platform.

11. Increasing demand for real-time analysis bolsters interest in standards – Predictive Model Markup Language (PMML)

Predictive Model Markup Language (PMML) is a standard for statistical and data mining models. The standard makes it easy to develop a model on one system with a particular application and then deploy the model on a different system using a different application. Making use of PMML can help speed up the modeling processing significantly. The Data Mining Group (DMG), an independent consortium led by vendors and focused on developing standards for data mining, developed PMML. IBM and SAS are full members of the DMG. Other vendors included in this report—SAP, StatSoft, RapidMiner, and Angoss—have also contributed to the development of PMML.

Analytics can no longer be managed solely through a statistics or data analysis department. Analytics needs to be infused in all decision-making activities across all areas of the organization such as marketing, sales, operations, finance, and human resources.



The business need to analyze predictive models in real time to improve outcomes in areas such as customer churn analysis, next best action, or fraud prevention has led to a major change in the way predictive models are prepared and deployed. Many companies had historically managed the analytics process in batch mode. This approach is rapidly changing. Increasingly, companies want to use real-time feedback to continuously improve the accuracy of their models. These companies find that deploying models in applications with PMML helps to overcome delays and speed up the process of moving models more quickly into production. One of the major benefits of using PMML is that it eliminates the need for costly and time-consuming custom coding and proprietary processes.

IV. Customer Examples in Advanced Analytics

The key trends as detailed in the previous section are reflected in the way companies are leveraging advanced analytics to transform business processes. The customers we interviewed for this research study are taking a more prescriptive approach to traditional business challenges, such as sales and inventory forecasting, resulting in significant improvements in accuracy. In addition, we found many examples of companies using analytics to reduce customer churn and improve the overall customer experience. As companies recognize the positive impact of analytics on one aspect of their business, they are rapidly applying advanced analytics to business challenges across the enterprise. Some of these customer examples are in finance and investment, business operations, reliability assessment, and threat and fraud reduction.

Table 1 illustrates several examples of advanced analytics customer use cases. Companies are using advanced analytical platforms that increase the speed of the data preparation and model development process and dramatically improve the accuracy of results.

The customers we interviewed for this research study are taking a more prescriptive approach to traditional business challenges, such as sales and inventory forecasting, resulting in significant improvements in accuracy.



Table – 1 Advanced Analytics Customer Examples

Use Case	Example	Why is this Advanced Analytics?
Predicting Consumer Behavior	A manufacturer can identify patterns in consumer preferences that it was previously not able to recognize using traditional analysis of the data. Use of predictive analytics has improved supply chain management and the ability to react to consumer demand. This manufacturer can now predict customer orders four months in advance with an accuracy rate of close to 98%.	This manufacturer deployed a real-time data warehouse to insure that multiple sources of data could be well-integrated and available at the right time for analytics. The company is building more accurate models using timelier data and more diverse data types. The models are designed to identify hidden patterns and create accurate forecasts.
Sales and Inventory Forecasting	A large multi-store retailer uses advanced analytics to develop models at a faster pace using larger volumes of data than in the past. This company benefited by improving the accuracy of its sales forecasting models and reducing inventories. The company achieved 82% accuracy in its forecasting, a major improvement compared to traditional approaches.	This retailer implemented an analytics platform that standardizes and automates a portion of the predictive analytics process. Using this platform, the company can build 500 predictive models per month as compared to one using traditional methods. The increased granularity in its models is yielding much greater accuracy.
Predicting Failures in Machinery	A medical equipment manufacturer embeds sensors in its equipment to monitor performance. The recorded data is constantly streamed and analyzed to predict potential failures with enough lead-time to make adjustments and avoid harm to patients.	Advanced analytics is used to build sophisticated algorithms that can uncover hidden patterns of failure and monitor sensitive equipment more accurately than more traditional methods. The volume of data that needs to be analyzed is large and streaming.

Table Continues

Advanced analytics is used to build sophisticated algorithms that can uncover hidden patterns of failure and monitor sensitive equipment more accurately than more traditional methods.

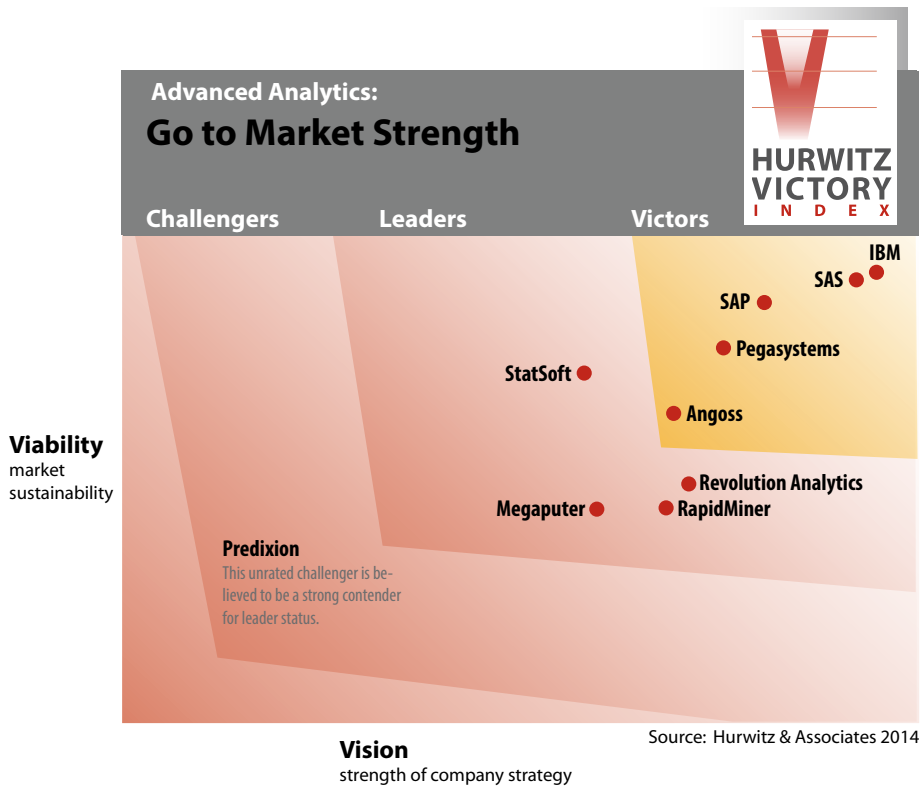
Predicting and Reducing Fraud	An insurance company uses advanced analytics to transform its approach to claims processing and improve fraud detection. The company improved its success rate in pursuing fraudulent claims from 50% to close to 90% and saved millions of dollars.	Predictive analytics is used to look at the whole claims process differently. Patterns of fraud are analyzed and used to rate the likelihood that each new claim may be fraudulent. Text mining is incorporated into the system to gain insight from analyzing the content of police reports and medical records.
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Predictive analytics is used to look at the whole claims process differently. Patterns of fraud are analyzed and used to rate the likelihood that each new claim may be fraudulent.

V. Vendor Scores: Victors, Leaders, and Challengers

The results of Go to Market Strength and the Customer Experience Strength analysis are presented in Figure 1 and Figure 2 below. Both charts are scatter plots that illustrate where each vendor scored relative to the median scores of the group. Figure 1 (Market Strength) is a plot of Vision vs. Viability. Figure 2 (Customer View) is a plot of Validity vs. Value. Some analytics vendors are winners in both categories. These companies are designated as Double Victors. The Double Victors are: IBM, SAS, SAP, and Angoss. Complete vendor profiles appear in the next section.

Go to Market Strength (Figure 1)



Victors: Go to Market Strength

The Victors in “Go to Market Strength” are all industry leaders in innovative advanced analytics solutions that enable customers to find new ways to gain value from all forms and large volumes of data. In addition to having a well-articulated and compelling vision for how companies can leverage their advanced analytics solutions, they also have the financial and market stability necessary to continue to deliver on their current strategy and long-term technology and business roadmap. Their customers are able to find hidden patterns in data and quickly build highly accurate predictive and prescriptive models that deliver positive outcomes for the business. Each Victor has a combined Vision and Viability score that ranks at or above the median scores across all the attributes measured in these two categories. IBM, SAS, SAP, Pegasystems, and Angoss received scores designating them as Victors from a Market Perspective.

IBM scored at the top of the “Go to Market Strength” category based on both its strong vision for advanced analytics and its continued strength and vitality as an organization. IBM sees advanced analytics as one of the foundational capabilities required by companies if they are to be successful in a highly interconnected, instrumented, and intelligent world. IBM’s vision is to empower customers to incorporate predictive, prescriptive, and cognitive analytics across their organizations to deliver better outcomes. In order to implement this vision, IBM is following a very deliberate approach to integrate its core analytics offering, SPSS, into a broad range of offerings across the IBM portfolio. The company’s goal is to bring predictive analytics to a diverse audience of users without requiring that they have training in the technical aspects of analytics. IBM has made extensive R&D investments and acquired numerous companies to support its vision for advanced analytics. A few of the acquisitions made in recent years include The Now Factory, Star Analytics, DemandTec, TeaLeaf, and i2.

SAS is also a top competitor in the “Go to Market Strength” category. The company’s strength in the advanced analytics market has been maintained over many years, with a laser focus on providing analytics products and services. The company has a strong vision to deliver new analytics algorithms and methods to support the increasingly complex business challenges. To solve these complex challenges, SAS has been heavily investing in its big data analytics strategy through SAS In-Memory Analytics and Hadoop initiatives. The SAS In-Memory Analytics investments allow customers to analyze more data and are designed to meet computing demands of analytics. The company’s Hadoop initiative offers the market one of the leading data management data mining, machine learning and text mining solutions. In addition, SAS is delivering easy-to-use and understand, interactive analytics to users across an organization. SAS has a very strong and loyal base of data scientists, statisticians and other highly technical users, which contributes to the high score for company strength and viability.

The Victors in “Go to Market Strength” are all industry leaders in innovative advanced analytics solutions that enable customers to find new ways to gain value from all forms and large volumes of data.



SAP has been elevated substantially in its market strength. SAP HANA, SAP's big data platform has been gaining traction in the market and the acquisition of KXEN gives SAP a strong analytics offering. SAP will be able to go forward offering SAP HANA as a more complete big data platform that is tuned to work with SAP Infitelnsight (formerly KXEN). In addition, integration with SAP can give SAP Infitelnsight better access to ERP and corporate data.

Pegasystems is a market leader in Business Process Management (BPM) and has expanded its rules-based decision management and predictive analytics into the Customer Relations Management (CRM) space. The company has had a high level of success in these spaces and has a strong focus on risk and compliance.

Angoss has been lifted to a Victor in market strength for its continued strategic focus on analytics. Its strategy to provide both an on-premises and a services-based solution is rated highly because it opens up options for companies that may not have predictive analytics skills in-house.

Leaders : Go to Market Strength

Leaders demonstrate solid brand and financial stability and have a good vision for their predictive analytics solution. However, companies in this category did not achieve Victor status for two main reasons. First, some Leaders are highly viable organizations, but their vision for predictive analytics is not as clearly articulated and well-executed as the companies rated as Victors. Second, some of the Leader companies recently dealt with management or other business changes that have hurt their ability to execute their predictive analytics strategy. These companies have strong technology and are in a great position to improve their Victory Index rating if they strengthen the clarity of their vision for predictive analytics. The Leaders are StatSoft, Revolution Analytics and RapidMiner.

StatSoft, acquired by Dell in March of 2014, is one of the industry veterans and has deep statistical capabilities. The acquisition should prove to be a very positive move for Dell and will provide long-term benefits for StatSoft and its loyal customer base. StatSoft's customers have a strong affinity for Statistica. In addition, although the company has made attempts to appeal to business users, it is still mostly suited for experienced data miners and data scientists.

Revolution Analytics has been able to take advantage of the rise in popularity of R and the difficulties that R users experience. The company offers support for R as well as platform enhancements, such as increased scalability. Revolution Analytics has established a strong list of partnerships, including Teradata, Hortonworks, Cloudera and Alteryx. While the adoption of R is continuing to increase, the language is still the purview of experienced data scientists and data analysts and nearly every vendor in this report has incorporated R into their solution.

Leaders demonstrate solid brand and financial stability and have a good vision for their predictive analytics solution.



RapidMiner is focused on extending advanced analytics to business users with a zero-programming approach using wizards. The company went through a rebranding in the fourth quarter of 2013 from Rapid-I to RapidMiner and received venture investment. The offering is built on open source and the availability of free trial software has resulted in a large installation base. The company is focused on using the venture investment to update its product offering and convert its installed base to customers.

Megaputer offers its customers a platform that combines strong text analytics with predictive analytics, social network analysis, OLAP, advanced statistics and report generation. While the company is small, it has a decent list of highly satisfied enterprise customers. The company's strategy of building strategic relationships with Maritz, Ernst & Young and Deloitte is helping it to broaden its reach. These large consulting firms use Megaputer tools in projects with their own clients. In addition, Megaputer has beefed up its own consulting practice and has partnered with key customers to build new customized solutions in domains such as threat and fraud detection, call center data analysis, and sales data analysis. The company's product, PolyAnalyst, enables customers to perform in-depth linguistic, semantic and statistical analysis of natural language text documents in 14 languages. While the technical capabilities of its offering are strong, Megaputer has a relatively low visibility in the highly competitive analytics market. As a result, the company will need to significantly step up its go-to-market strategy in order to achieve its goal of becoming a dominant player in the analytics market in the near future.

Challengers: Go to Market Strength

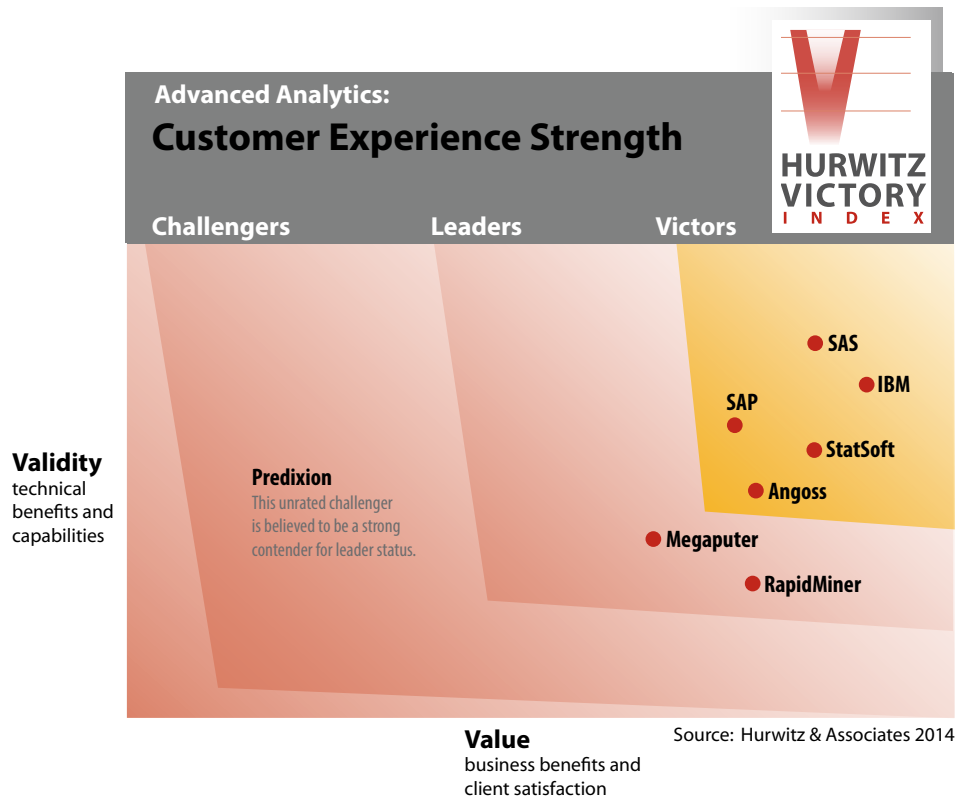
Challengers are viewed as potential Leaders or Victors, but because they are still an emerging company a little more time is required to provide them with an accurate rating in the Victory Index.

Predixion has made rapid progress since its founding in 2009 by focusing exclusively on the needs of business users who do not have access to data scientists and statisticians. Its approach is to provide business users with a self-service analytics platform that leverages wizards and commonly used tools like Microsoft Excel to make the modeling process easier for users. The company's product, Predixion Insight, is a predictive analytics platform that provides machine learning modeling (using different machine learning libraries), and includes components for collaboration and deployment. Predixion Insight functions as a cloud platform, an enterprise client/server platform (with web APIs), and a predictive analytics scoring workflow execution engine.

Challengers are viewed as potential Leaders or Victors, but because they are still an emerging company a little more time is required to provide them with an accurate rating in the Victory Index.



Customer Experience Strength (Figure 2)



Customer response rates were insufficient to place Pegasystems and Revolution Analytics on the chart

The Victors demonstrate superior technical and business value, technology and tools, customer support, and overall value as evidenced in customer survey scores and interviews with customers... The combined scores across Value and Validity rank at or above the median scores in this category. SAS, IBM, SAP, StatSoft, and Angoss are Victors in the Customer Experience category.

Victors: Customer Experience Strength

The Victors demonstrate superior technical and business value, technology and tools, customer support, and overall value as evidenced in customer survey scores and interviews with customers. Victors also have significant depth (and often breadth) of functionality and overall strong customer satisfaction scores. The combined scores across Value and Validity rank at or above the median scores in this category. SAS, IBM, SAP, StatSoft, and Angoss are Victors in the Customer Experience category.

SAS is the overall Victor in the customer experience category. Customers gave SAS the highest scores for overall breadth and depth of the offering’s statistical functionality. In addition, SAS received the highest marks in quality of customer support, technology and tools, ability to support data scientists and statisticians, and performance and scalability. Customers also like SAS’ large and active user communities.

IBM is a close second as Victor in the customer experience category. Among the full-featured vendors, IBM scored the highest in ease of use. This high score is most likely based on IBM’s strategy of providing different solutions to customers based on their statistical and analytics experience (different offerings for business and data science users for example). In addition, IBM received the highest scores for ROI, Business Value, Data Preparation (i.e., ETL), and its ability to support business analysts and users.

StatSoft has a very enthusiastic customer base that awarded StatSoft the highest mark for value compared to price. Although the offering may lack the full breadth and depth of statistical functionality that IBM and SAS exhibit, customers felt that the offering met the right mix of functionality and price. In addition, StatSoft scored well in ease of use, integration with other software, ability to support business analysts and users, and overall satisfaction with the product.

SAP customers are beginning to see the integrations between SAP and KXEN (acquired in the fourth quarter of 2013 and now named SAP InfiniteInsight). Customers felt that the offerings have a fast time to value, strong data preparation capabilities and ability to support very large data sets. Customers liked SAP InfiniteInsight's model automation capabilities. In addition, In addition, SAP HANA customers reported that they have experienced the high speed that the system promises.

Angoss customers enthusiastically agreed that the company's visual Decision Trees and Strategy trees were excellent and easy to understand for both technical and business users. Overall satisfaction for the offering was very high as was the ability of the offering to support the needs of business users. In addition, Angoss customers who also use SAS appreciate the ability to output an entire workflow in SAS code. With a graphical interface and visualizations, data analysts and scientists are able to evaluate results quickly and find it easy to explain these results to subject matter experts who might not be as familiar with predictive analytics.

Leaders: Customer Experience Strength

Leaders have a solid product as indicated by customer survey scores. Customers are generally satisfied with their solutions and believe that they provide good value. However, the scores were not as high as the companies that achieved Victor status. The summary for each Leader below highlights the areas where the company scored well and points out one or two areas where customers would like to see improvement. Megaputer and RapidMiner are Leaders in the Customer Experience category.

Megaputer provides a strong solution for customers looking for an integrated offering that combines text analytics and predictive analytics. Customers felt that Megaputer's technical capabilities were very strong, giving the offering high marks in breadth and depth of statistical functionality, flexibility and overall technical benefits. Megaputer users thought that the offering was difficult to use and wished new features and functionality were rolled out more quickly.

RapidMiner received high marks for its ease of use and breadth and depth of statistical functionality. Customers liked the fact that they could try the software for free before investing in an enterprise license. In addition, customers liked RapidMiner's approach to machine learning and its text mining capabilities. Some customers found data preparation capabilities to be lacking, as well as RapidMiner's ability to support very large data sets.

Leaders have a solid product as indicated by customer survey scores... Megaputer and RapidMiner are Leaders in the Customer Experience category.



Challengers: Customer Experience Strength

Challengers are viewed as potential Leaders or Victors, but because they are still an emerging company a little more time is required to provide them with an accurate rating in the Victory Index.

Predixion has been successful at adding new customers at a pretty good pace since the company was founded in 2009. The customers we interviewed like the fast time to benefit that Predixion's applications offer over traditional advanced analytics solutions. In addition, customers like the integration with R that builds on the breadth and depth of Predixion's statistical functionality. Feedback from customers indicated that the offering is limited in the completeness of data types, as well as data preparation capabilities.

The customers we interviewed like the fast time to benefit that Predixion's applications offer over traditional advanced analytics solutions. In addition, customers like the integration with R that builds on the breadth and depth of Predixion's statistical functionality.



VI. Vendor Assessment: SAS

Company: SAS
Private

Website: www.sas.com



SAS offers a complete analytics solution with strong technical depth and breadth of functionality. SAS supports customers with increasing volumes of complex data across a wide variety of vertical industries.

SAS has maintained a strong position in the advanced analytics market since Dr. Jim Goodnight, CEO, and John Sall, EVP, founded the company in 1976. The company has consistently pushed limits and innovated on analytic functionality in order to solve a variety of business problems. SAS offers customers a very broad based analytics platform including capabilities such as predictive and descriptive modeling, data mining, text mining, machine learning, forecasting, operations research, simulation, experimental design, optimization, quality improvement, content categorization, ontology management, sentiment analysis, and contextual analysis. In addition to the in-depth analysis of data, SAS also provides customers with extensive data management capabilities for the collection, preparation, and classification of data and data discovery capabilities and visual data exploration and reporting. Many statisticians and data scientists that make up SAS's large and loyal customer base have been using SAS Analytics since they were in graduate school. While these highly technical users are still in the majority, SAS has been adding capabilities that make analytics more accessible to the business user. For example, SAS Visual Analytics offers a highly interactive vehicle to visually explore data and execute self-service analytics so business users and analysts can quickly discover and share insights.

Many companies choose SAS for its ability to handle very large data sets. SAS can be used to develop models on tens of thousands of candidate predictors (columns) and billions of cases (rows). The company takes an approach that provides relatively easy scaling of the analytics processes by modifying data management and analytical algorithms to take advantage of more nodes. For example, SAS LASR Analytic Server, an in-memory analytics engine, offers massively parallel scaling on computer clusters ranging in size from a few nodes to hundreds of nodes without sacrificing performance.

Lately SAS has invested substantially in its well-conceived big data analytics strategy through SAS In-Memory Analytics and Hadoop initiatives. SAS' In-Memory Analytics continues to be a central focus for its big data goals. SAS' LASR Analytic Server allows users to take advantage of SAS' multi-threaded, in-memory analytics engine to analyze more data without moving it – whether it is in form of descriptive, predictive, or prescriptive. SAS customers are using this distributed computing environment to solve a variety of complex business

Many companies choose SAS for its ability to handle very large data sets. SAS can be used to develop models on tens of thousands of candidate predictors (columns) and billions of cases (rows). The company takes an approach that provides relatively easy scaling of the analytics processes ...



challenges. In addition, SAS has roadmap plans to apply SAS In-Memory Analytics technology to an array of vertical and horizontal offerings.

SAS has launched new products to be used on the Hadoop big data platform. In addition, it had enabled its existing portfolio to work natively in Hadoop. Users of SAS can manage the entire analytic lifecycle in Hadoop- data preparation and exploration, model development and deployment. SAS has continued its investments on the in-database front as well. Besides in-database modeling and scoring, SAS also supports in-database data quality processing to avoid data movement between different analytics processing steps and get faster insights. SAS has distinguished its approach to in-database scoring by creating a broad portfolio of options. For example, SAS supports a variety of third-party databases (i.e., Teradata Aster Data, Pivotal (Greenplum), IBM DB2 and Netezza, Oracle, and Hadoop). To support these options, SAS has created an analytic model management and deployment environment (i.e. SAS Model Manager) that is integrated with its SAS Scoring Accelerator. SAS Model Manager is intended to streamline registration, validation, publishing and retraining of SAS models that are managed inside the database or Hadoop. It also tracks and monitors model performance.

A partnership between SAS and SAP was announced in the fourth quarter of 2014. SAP and SAS will partner closely to create offerings that leverage the real-time capabilities of SAP's HANA platform with SAS' analytic algorithms. We expect the partnership to enable more big data analytics projects by reducing time-consuming and expensive data movement and allowing for faster decision making.

Along with internal software development, the company has also grown through acquisitions. Over the last several years SAS has purchased two software companies that support its strategic goals. One company, AIMatch, is focused on analytics for ad purchases. In addition, SAS acquired the assets of rPATH, a technology company that created software to manage hybrid cloud based deployments by automating the setup and management of SAS applications in a variety of deployment approaches.

Several key areas of innovation for SAS include:

- Advances in the area of high-performance analytics with extensive support for in-memory analytics computation and complete data-to-decision support for Hadoop.
- Development of new analytical algorithms designed to support highly complex customer problems. SAS is offering customers a choice of delivery models for these algorithms – including on-premises, private cloud or public cloud.
- Providing customers with an analytics life cycle approach to make it easier and faster to prepare and integrate data, and apply business rules, models and optimization techniques in a single enterprise decision management platform.

Along with internal software development, the company has also grown through acquisitions. Over the last several years SAS has purchased two software companies that support its strategic goals.



- Providing customers with extensive model monitoring KPI's to detect model decay for each model in a model portfolio. This capability makes it easier for customers to understand model degradation and make necessary adjustment to improve quality.
- Continued innovation in solutions for specific functional areas and vertical markets. For example, SAS offers a customer analytics focused platform that does everything from 360-degree view of customer to profiling, customer segmentation, digital marketing, campaign optimization, and multichannel data analytics.
- Innovation in the area of fraud detection and management. SAS experienced double- digit growth over the past year in cloud solutions that fight financial fraud.

SAS customers interviewed for the Victory Index rate customer satisfaction very high. Customers agreed that SAS had strong data preparation abilities including data cleansing and identifying outliers. In addition, SAS' depth and breadth of statistical functionality stood out. SAS users felt that the package provided them with nearly every operation a data scientists could need. One customer at a large government agency particularly appreciates how SAS helps them to get the insights they need from big data, stating: "SAS is very easy to work with and it gives us the ability to easily categorize and segment data for in-depth analysis."

SAS also scored very high in the area of customer support and enablement. One customer stated: "SAS is always very responsive to our business and technical questions. This is one reason why SAS is always a top vendor." Customers feel that SAS is a true partner and works hard to ensure that you will be successful. One customer mentioned they had taken advantage of SAS' offer to provide free trial versions of its software. They were able to spend as much time as needed to test it out and "did not need to pay for licensing until they went into production."

The SAS customers we interviewed are very advanced users, however they are concerned that for others on their team with more limited experience there can be a steep learning curve with the product. As SAS comes out with more offerings for data analysts and business users we expect these concerns to be minimized.

Customers feel that SAS is a true partner and works hard to ensure that you will be successful.



SAS' key differentiators include:

- Breadth and depth of statistical functionality with continued focus on the delivery of new analytical algorithms and methods for different analytical domain areas and data sizes.
- Multiple delivery options including on-premises, private cloud or public cloud infrastructure.
- Factory approach to the entire analytics lifecycle enables customers to manage data, explore relationships, and build, deploy and retrain models without moving data.
- Ability to scale analytic processes. For example, SAS Analytics takes advantage of massively parallelized, distributed architectures and provides a variety of scale-up or scale-out options to address complex problems.
- Distributed in-memory processing engine for very fast, stable, concurrent data discovery and advanced analytics tasks.

SAS Analytics products are targeted to organizations of all sizes, including small, mid-market and large enterprises.

Vendor Overview

Products

SAS Visual Analytics 6.4: Self-service, ad hoc visual data discovery and exploration. Absolutely no coding required. Utilizes in-memory technology that allows the exploration of billions of records in seconds, enabling users to find previously unknown relationships or spot trends in the data. Decision trees, network diagrams, on-the-fly forecasting and scenario analysis are seamlessly integrated with ease-of-use features such as autocharting, "what does it mean" pop-ups, and drag-and-drop capabilities. Easily distribute quickly designed interactive reports via the Web, Microsoft applications or mobile devices.

SAS Analytics 13.1: Streamlines the creation, validation, deployment, and monitoring of analytical models on vast amounts of data. Provides a broad spectrum of analytical capabilities ranging from statistics, data mining, machine learning, text analytics, forecasting, simulation, optimization, model management, econometrics and others.

SAS High-Performance Analytics 13.1: Massively parallel in-memory processing for statistics, data mining, text mining, optimization, and econometrics use cases involving big data and complex problems.

SAS In-Memory Statistics for Hadoop 2.1: Provides a single interactive programming environment that enables the preparation of data for analysis, transformation of variables, exploratory analysis, building and comparing models, and scoring models - all inside the Hadoop environment.



SAS Scoring Accelerator 9.4: Scoring models can be published into database-specific functions and/or embedded processes to be executed directly within the database or Hadoop cluster.

SAS Text Analytics 13.1: Uses sophisticated linguistic rules and statistical methods to evaluate text - from social media content, call center logs, emails, loan applications, service notes, warranty claims - like a human mind would, minus the inconsistency and ambiguity.

Target User/ Company size	SAS Analytics products are targeted to organizations of all sizes, including small, mid-market and large enterprises. SAS has a long-standing stronghold with data scientists and other analytics professionals responsible for the actual creation of models and forecasts. The company also provides specific analytics offerings that are targeted towards business users. In addition to SAS Visual Analytics, SAS Rapid Predictive Modeler automatically generates predictive models and is designed to support business analysts through its wizard-driven approach.
Verticals Supported	Automotive, banking, capital markets, casinos, communications, consumer goods, defense and security, government, healthcare providers, health insurance, high-tech, higher-education, hotels, insurance, K-12 educations, life sciences, manufacturing, media, oil and gas, retail, sports, travel and transportation, and utilities.
Horizontal Solutions	Customer Intelligence, Financial and Performance Management, Fraud and Security Intelligence, Risk Management, Supply Chain Intelligence, and Governance, Risk and Compliance, among others.
How Offered	<p>SAS offers a variety of licensing options to suit the needs of enterprises, government entities, non-profits, education institutions and individuals. Licensing options include enterprise licensing, server capacity-based/CPU based, value-based, home-office, per-use/month and yearly subscription. There are pricing programs for SMB's including named users. SAS is available on the public and private cloud.</p> <p>In addition, SAS offers free use of its foundational technologies in the new SAS University Edition. Professors, researchers, students and adult learners can access this edition via a quick download from the web. SAS University Edition is offered worldwide for use on PCs or Macs.</p>
Advanced Analysis Families	<p>SAS provides algorithms and functions for the following key analytic categories:</p> <ul style="list-style-type: none"> • Optional sampling design and selection • Statistical transformations to optimize the predictors with the response outcome

The core analytic data preparation tasks are very comprehensive including everything from sampling, data partitioning, and transposing to string matching function, and statistical outlier detection, summarization, and aggregating data attributes.



- Variable selection and reduction
- Descriptive modeling techniques
- Predictive modeling techniques
- Statistical techniques - Analysis of Variance models, Multivariate relationship models Survival analysis, and Bayesian analysis
- Machine Learning – Random Forests, Clustering, Neural Networks, Deep Learning
- Survey design and analysis
- Text mining
- Forecasting
- Econometric Time Series
- Optimization
- Sentiment analysis management
- Additional customized methods specific to industry related topics.

Key Features

Data Preparation and integration:

SAS provides a broad range of data preparation tasks, data profiling, data cleansing, and ETL and ELT capabilities. The core analytic data preparation tasks are very comprehensive including everything from sampling, data partitioning, and transposing to string matching function, and statistical outlier detection, summarization, and aggregating data attributes. SAS provides integration to 3rd party SQL data preparation tools, such as Teradata SQL Assistant, Teradata ADS Builder, IBM SQL Editor for DB2 and Oracle SQL Developer. In addition, SAS provides in-database processing for summarization, reporting, sorting, and ranking, reducing the need for data movement.

SAS open architecture enables other vendors to integrate into SAS and for SAS to integrate back into other vendor solutions (read SAS data sets or generate SAS scoring code). SAS can import other vendor's (including Open Source R) predictive models to facilitate champion/challenger model comparison. Many vendors generate SAS scoring code and can read SAS data sets to let SAS be the glue for their Analytics hub implementation. SAS Model Manger can serve as a model management and deployment hub, providing users with a wide range of options (e.g. SAS, C, Java, PMML, in-database, in-memory) to operationalize analytics for deployment in batch or real-time.

SAS provides an open, extensive choice of integration APIs (C, .NET, C#, C++, Objective C, Python, Java, VB, SOAP, REST, and XML-RPC) for developers to extend advanced analytics capabilities remotely. In addition, SAS enables development of custom SAS procedures, formats, functions, and call routines in multiple languages.

Models can be deployed in a SAS environment taking full advantage of the underlying SAS platform and its metadata management capabilities. Models can also be deployed directly via a number of in-database partnerships, using the SAS Scoring Accelerator.



Data formats/databases supported:

Most general purpose relational databases and/or appliances are supported including IBM DB2, Informix, Oracle, Teradata, Microsoft SQL Server, Sybase, Pivotal (Greenplum), SAP HANA, Teradata Aster, ODBC, JDBC, OLE, MDX, MySQL, IBM Netezza, Apache Hadoop, Cloudera, Hortonworks, MapR, PivotalHD, HDFS, and more. Supported non-relational/other sources include ADABAS, Datacom, CA-IDMS, IMS, PC files, System 2000, VSAM, SOAP, RSS, WSDL, Microsoft Access, Microsoft Excel, and more. SAS supports bulk loading, and implicit/explicit pass-through capabilities. In addition, SAS provides the integration of survey, market baskets, call detail records, clinical trial data, genetic sources, web transactions, GIS spatial data, time-stamped transactional data, and many more sources as inputs to the modeling process. SAS also provides connectivity to salesforce.com, force.com, database.com and data direct cloud data sources. In addition, SAS integrates with GIS sources (e.g. ESRI) and OpenStreetMap to provide integration with aerial maps and street-level maps.

In-database analytics:

SAS supports in-database scoring to publish models and score data directly within the database to yield faster results, avoid unnecessary data movement, and make actionable decisions. In addition, SAS supports in-database data quality processing.

Model export:

Scoring code including transformations is generated in SAS, Java, C, and PMML for deploying in SAS and non-SAS environments. SAS Enterprise Miner supports PMML Version 4.1 for model score code generation. The score code is optimized to include the minimal required set of variable inputs to support fast and efficient deployment.

Model deployment/management:

Using SAS Model Manger as the analytic deployment hub, users have many options for deployment. Models can be deployed in a SAS environment taking full advantage of the underlying SAS platform and its metadata management capabilities. Models can also be deployed directly via a number of in-database partnerships, using the SAS Scoring Accelerator. Models are automatically translated and embedded in production systems, saving weeks of manual translation to SQL. Using the Scoring Accelerator, users can directly deploy scoring logic developed in SAS into their native operational system, such as Hadoop, Teradata, IBM Netezza, IBM DB2, Oracle, SPDS, Teradata Aster, and Pivotal (Greenplum).



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Hurwitz & Associates is a strategy consulting, market research, and analyst firm that focuses on how technology solutions solve real world customer problems. Hurwitz & Associates research concentrates on disruptive technologies, such as Big Data and Analytics, Cognitive Computing, Cloud Computing, Service Management, Information Management, Application Development and Deployment, and Security. Our experienced team merges deep technical and business expertise to deliver the actionable, strategic advice clients require. For more information, please visit www.hurwitz.com.



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13A Highland Circle • Needham, MA 02494 • Tel: 617-597-1724
www.hurwitz.com