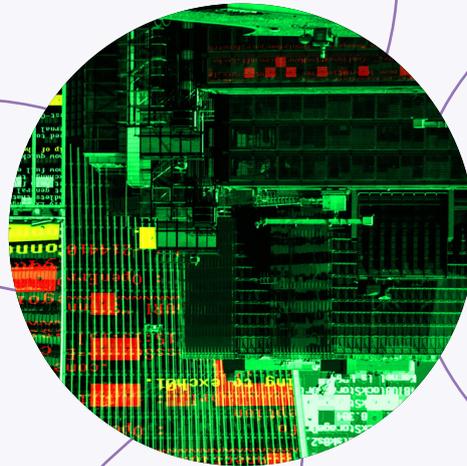
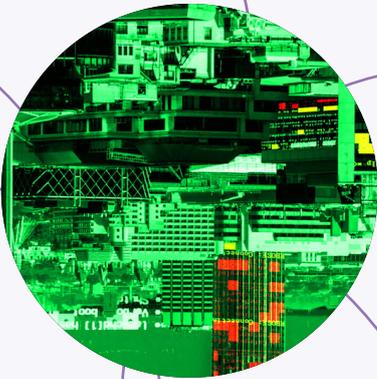


# Vendor Analysis: SAS

Trade-based Anti-Money Laundering Solutions, 2022





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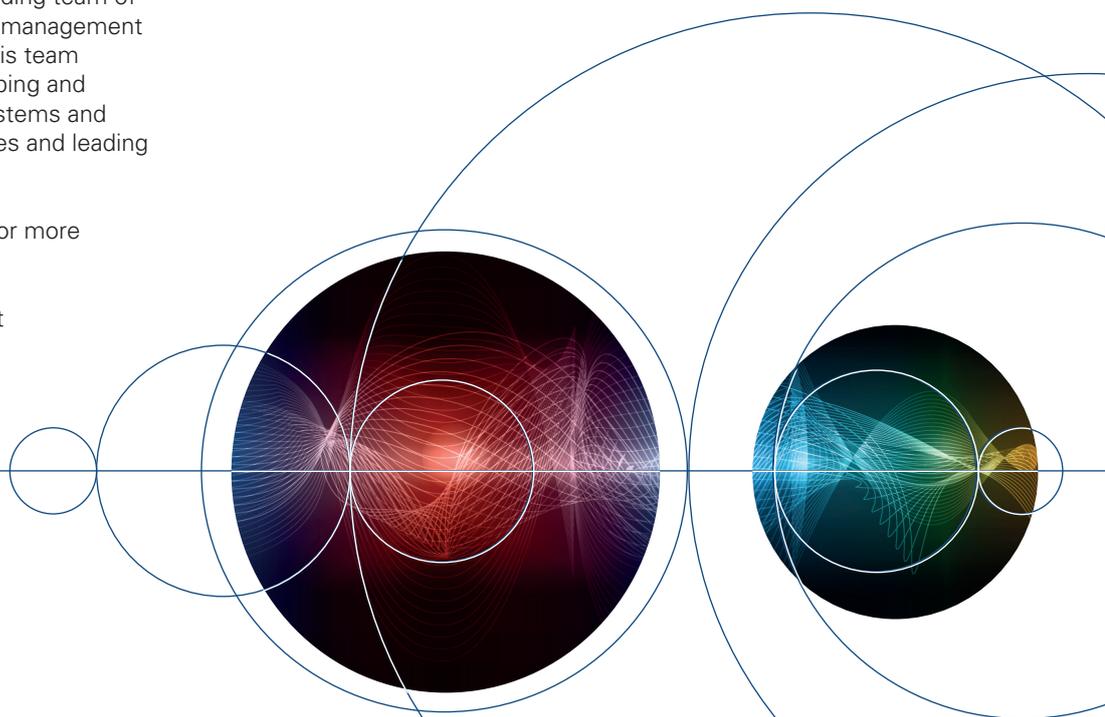
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# 1. Report context

This Vendor Analysis is based on the Chartis quadrant report ‘Trade-Based Anti-Money Laundering Solutions, 2022: Market and Vendor Landscape’). This section summarizes the key theses in that report; subsequent sections take a detailed look at SAS’s quadrant positioning and scoring, and Chartis’ underlying opinion and analysis.

## Key thesis

Trade-based money laundering (TBML), a growing phenomenon within the financial services industry, is costing financial firms millions of dollars and is attracting increasing regulatory scrutiny as criminals conceal illegal transactions through goods and commodities. Methods of managing it, however, are still not well-delineated. This report defines TBML and discusses how it has developed over time, examining and analyzing the following key points:

- **Trade-based anti-money laundering (TBAML) tools and techniques are often considered to be analogous to trade compliance**, yet TBAML is a separate discipline with its own requirements and a focus on funding flows and transactions.
- **The institutions most interested in TBAML solutions are those with significant cross-border activities**. There has been a global move toward ‘de-risking’ in financial services, including a decline in correspondent banking relationships, and the financial institutions that remain have been left open to significant regulatory risk, including from TBAML-related incidents. Because of this they are now the main buyers of TBAML solutions.
- **Challenges around TBAML include a lack of visibility and a lack of clarity**. These arise because of a lack of data (for commodity pricing when analyzing transaction flows, for example) and a lack of clarity around how to build effective processes for TBAML.
- **TBAML covers both trade finance and open-account payments**. While trade finance is an area of wide data coverage, there is limited clarity around its processes. Open-account payments have limited available data but can be addressed (to some extent) with entity analysis.

However, Chartis anticipates that this area will contain major challenges moving forward.

- **The TBAML solutions landscape is immature but diverse**. Vendors have largely moved into this space from related areas, and their solutions reflect the characteristics of the particular financial crime risk management sectors in which they originate. This is creating a diverse marketplace with relatively few ‘enterprise’ vendors.
- **Firms are divided along quantitative and qualitative lines**, focusing, respectively, on managing commodity document analytics and analysis, and the entity risk of vendors.
- **The defined vendor marketplace is relatively small, but many vendors are preparing to enter the space**. Because of this there are many ‘companies to watch.’
- As for **the future of TBAML**, effective data aggregation and analytics will improve, driven by regulatory standardization and enhanced testing capabilities. There will be significant opportunities for Big Data platforms in this space.

In summary, the TBAML solutions market remains an area of great opportunity for both financial institutions and vendors. Chartis expects competition in this space to intensify over the coming years, as firms expand into adjacent areas (such as trade digitization, in-house vessel analytics and data aggregation) and combine fundamental and quantitative approaches to build end-to-end solution capabilities. However, TBAML is also a complex area that is likely to require types of data analytics (notably commodity pricing analytics) that are some way from being a reality. As such, we expect this market to grow in both size and complexity over the next few years.

## Demand-side takeaways

### Defining TBML

Although trade-based money laundering (TBML) is not a new way of smuggling illicit funds, it has only recently been formalized into a phenomenon that is attracting significant regulatory attention. Because of this relative newness, it is useful to establish definitions of what it is and what it is not.

Chartis uses the definition of TBML provided by the Financial Action Task Force (FATF): ‘the process of disguising the proceeds of crime and moving value through the use of trade transactions in an attempt to legitimize their illegal origin or finance activities.’<sup>1</sup> This focus on funds and transactions is what characterizes trade-based anti-money laundering (TBAML) as a unique discipline with its own particular requirements and technological landscape. TBAML is not the same thing as ‘trade compliance,’ which is the network of regulatory requirements around trading, including the screening of counterparties.

## The development of TBAML

The discipline of anti-money laundering today faces many unresolved and under-scrutinized challenges, not least because in a digitized and globalized world, criminals have a wide range of money-laundering strategies available to them.

Popular notions of money laundering tend to focus on retail/individual and wholesale/corporate approaches, generally involving individual criminals using various methods to incorporate dirty cash into financial instruments. More sophisticated approaches tend to be seen as mixing cash into otherwise legitimate business activities. While both of these examples do constitute money laundering, money laundering activity is being integrated into everyday commerce and life at a much deeper, more complex level – one that surpasses the capabilities of leading-edge AML technology and regulatory surveillance systems.

## TBAML – the challenges

TBAML, the process of detecting and preventing TBML, has significant challenges. Barriers to successful TBAML take two main forms:

- **A lack of clarity around processes.** Many regulators and businesses lack the requisite understanding of how TBML works and how it can be detected. Because money launderers have been seen as being able to transfer money by simply mispricing goods in transactions, many regulators and businesspeople have declared the TBML problem virtually unsolvable.
- **Incomplete visibility.** Trade happens in a complicated and antiquated ecosystem in which information held by all parties is incomplete. This is due in part to the international nature of trade transactions, and in part to the state of the data
- **Normal processes rely on common-sense checks.** While the largest banks are now implementing prototype technology stacks to tackle TBAML, those with fewer technical resources rely on analysts to review transactions and use common sense to spot anything unusual. This is challenging, especially because the financial activity involved in trade may have a variety of rationales. In commodity trade finance, for example, trading clients may be executing mirror trades that are perfectly legitimate arbitrage opportunities. Under these specific conditions, it is almost impossible to separate out a ‘normal’ transaction from an unprofitable one.

that might be leveraged to adequately detect TBML. The international challenge arises when countries do not provide each other with usable trade data. Essentially, if data from both trading partners cannot be obtained and compared for accuracy, detecting trade fraud is very difficult. Companies may lack the documentation required to know what is being traded and how those goods are being shipped. In many circumstances, bankers are only given trade documentation on request, or not at all (as in the case of open-account trade).

## The current state of play

AML programs have historically relied on manual detection methodologies, whereby trained investigators search for known ‘typologies’ (i.e., different kinds of money laundering schemes) – a lengthy and onerous approach to finding laundered money. Firms have begun to apply automation at the edge of the AML detection process (to increase the speed of operations on routine tasks). Review of Know Your Customer (KYC) and AML cases has been left to analysts, who will first look at the details provided for a given case, and then, if required, leverage a range of investigative tools to collect information that can supplement their preliminary hypotheses, so they can decide what to do.

Whereas money launderers have traditionally relied on flaws in the financial system and traditional assets, contemporary money launderers are believed to be operating in alternative sections of the financial system, leveraging non-financial assets in a way that enables them to function as a store of value. In other words, in the newer model of business-oriented money laundering that leverages multiple points of international trade, anything that can be sold or resold can be used as a vehicle for laundered money. In short:

<sup>1</sup> <https://www.fatf-gafi.org/publications/methodsandtrends/documents/trade-basedmoneylaundering.html>

- **There is a lack of insight into the supply chain and counterparty network.** Banks often know little about their customers' customers; as a result they must rely on the quality of KYC performed by their financial counterparty. Firms must be very rigorous around financial counterparty KYC in instances where they cannot perform Know Your Customer's Customer checks.

## Supply-side takeaways

### The TBAML solutions market: immature but diverse

For firms attempting to detect traditional patterns of money laundering that display some regularity, rules-based AML systems may be viable to a certain extent. This approach breaks down, however, when attempting to reveal the wide variety of money laundering strategies that have evolved beyond traditional frameworks.

This lack of formalized discipline has led to significant diversity in the marketplace. Market adoption in the TBAML solutions market is limited to a handful of enterprise deployments, alongside a slightly larger set of active vendor proofs of concept (PoCs).

While dozens of firms compete in the AML and related markets, only a minority of firms claim to have TBAML capabilities, for several reasons:

- The lack of clarity around the regulatory requirements for what TBAML solutions should provide.
- The complexity of providing TBAML solutions in terms of data management and analytics.
- The general view that there is a relatively finite number of potential customers willing to buy a solution for its TBAML capabilities.

### The vendor divide: 'quantitative' vs. 'fundamental' approaches

The differences in approach taken by AML vendors have bifurcated, reflecting the differing approaches taken by client financial firms:

- **Quantitative approaches to TBAML** focus on what are traditionally viewed as the core indicators of TBAML activity. They include commodity and document analytics and AML customer and transaction activity data. These

platforms focus more heavily on statistics-powered data analytics for data-rich AML transaction monitoring, using either proprietary trade digitization software or solutions from partners.

- **Fundamental approaches to TBAML** attempt to skirt ambiguity in statistical risk analytics by instead refocusing the AML process on a combination of entity risk intelligence and network analytics. These platforms search for related party transaction points and can deliver superior entity data to enable users to generate enhanced TBAML customer risk ratings.

Part of the reason for the split in approaches relates to the underlying technology stack and how these software products employ advanced analytics at every step in the TBAML workflow. Vendors adopting the fundamental approach begin by performing named-entity recognition to define entities, before layering on entity resolution to resolve different datasets against each other, and supplementing this with relationship mapping to produce intelligence about network risk. Elements of statistical analysis are involved, but they are employed primarily to quantify the risks in a given network (which are driven by qualitative criteria such as the risk posed by a given entity).

Other vendors focus on data processing, using more conventional technologies for text processing (such as optical character recognition [OCR] for document processing, and string matching for identity matching and document validation). But they are employing increasingly complex statistical approaches, from machine learning models to neural network approaches to identifying anomalous transaction patterns.

In addition, other classes of data analytics (such as geospatial analytics) are employed for vessel tracking, while for product and geographic risk, some firms employ proprietary workflows that develop quantitative scores from qualitative risk datasets.

## 2. Quadrant context

### Introducing the Chartis RiskTech Quadrant®

This section of the report contains:

- The Chartis RiskTech Quadrant® for TBAML solutions, 2022.
- An examination of SAS's positioning and its scores as part of Chartis' analysis.
- A consideration of how the quadrant reflects the broader vendor landscape.

#### Summary information

##### *What does the Chartis quadrant show?*

The RiskTech Quadrant® uses a comprehensive methodology that involves in-depth independent research and a clear scoring system to explain which technology solutions meet an organization's needs. The RiskTech Quadrant® does not simply describe one technology option as the best solution; rather it has a sophisticated ranking methodology to explain which solutions are best for specific buyers, depending on their implementation strategies.

The RiskTech Quadrant® is a proprietary methodology developed specifically for the risk technology marketplace. It takes into account vendors' product, technology and organizational capabilities. Section 4 of this report sets out the generic methodology and the criteria used for the RiskTech Quadrant® for TBAML solutions, 2022.

##### *How are quadrants used by technology buyers?*

Chartis' RiskTech and FinTech quadrants provide a view of the vendor landscape in a specific area of risk, financial and/or regulatory technology. We monitor the market to identify the strengths and weaknesses of different solutions and track the post-sales performance of companies selling and implementing these systems. Users and buyers can consult the quadrants as part of their wider research when considering the most appropriate solution for their needs.

Note, however, that Chartis Research does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with

the highest ratings or other designation. Chartis Research's publications consist of the opinions of its research analysts and should not be construed as statements of fact.

##### *How are quadrants used by technology vendors?*

Technology vendors can use Chartis' quadrants to achieve several goals:

- Gain an independent analysis and view of the provider landscape in a specific area of risk, financial and/or regulatory technology.
- Assess their capabilities and market positioning against their competitors and other players in the space.
- Enhance their positioning with actual and potential clients and develop their go-to-market strategies.

In addition, Chartis' Vendor Analysis reports, like this one, offer detailed insight into specific vendors and their capabilities, with further analysis of their quadrant positioning and scoring.

### Chartis Research RiskTech Quadrant® for TBAML solutions, 2022

Figure 1 illustrates Chartis' view of the TBAML vendor landscape, highlighting SAS's position.

## Quadrant dynamics

### General quadrant takeaways

During the course of this research, Chartis identified that vendors in the quadrant approach the building of TBAML solutions from two perspectives:

- Building more data integration and workflow solutions to empower TBAML end users and support them in automating their manual processes.
- Supporting knowledge work by leveraging analytics to identify unseen TBAML risks.

Figure 1: RiskTech Quadrant® for TBAML solutions, 2022



\* Clari5 is owned by CustomerXPs  
Source: Chartis Research

Firms implementing TBAML solutions have to address a wide variety of workflow challenges to manage their implementation effectively, while also requiring a wide variety of well-conceived analytical models in order to detect illicit activity.

The strongest vendors at present are solving both problems simultaneously, building out their horizontal end-to-end technology and making their risk analytics more specialized. As use cases are disaggregated in many vendors, only a handful of firms emerged as category leaders capable of handling a broad swath of risks and technological requirements for regulated institutions.

### Vendor positioning in context – completeness of offering

SAS was the highest-scoring vendor along the completeness of offering axis. Chartis’ assessment of SAS was based on the following characteristics:

- **Broad end-to-end automation capabilities.** SAS offers its TBAML clients a fully featured solution that enables end-to-end process automation. The SAS solution is notable for combining data extraction, data fusion, document and transactional analytics, KYC/AML analytics and workflow management. In particular, the integration of analytics for trade

documents – to extract text from images and to perform various checks for trade fraud and AML risk indicators – stood out.

- **Deep risk typology analytics capabilities.** Chartis assessed SAS’s AML risk typology coverage against the categories of risk indicators outlined in the FATF’s TBML risk Indicators guidance (released in March 2021). This document highlights four core categories of TBML risk that firms should look out for. In Chartis’ analysis, SAS supported several of these categories holistically:

  - **Structural risk.** SAS supports structural risk identification by integrating Know Your Business entity data management and analytics capabilities, which were tightly integrated into AML risk typology coverage. SAS employs a data fusion-led approach that enables businesses to be assessed for a wide variety of structural indicators, including addresses, business type, jurisdiction and directorships, which could reflect increased money laundering risk.
  - **Trade activity risk.** The SAS platform is capable of integrating trade route and structure analytics into TBAML transaction monitoring activities by providing programmable analytical engines alongside pre-packaged typologies to target these scenarios.
  - **Trade document and commodity risk.** SAS has strong document processing and analytics functionality, empowering end users to digitize manual trade finance workflows, automate trade fraud checks and analyze transactions for unusual behavior. While SAS does not support commodity risk analytics comprehensively, Chartis did not identify any vendors in the market that offered more than partial coverage.
  - **Account and transaction activity.** This is a sweet spot for SAS. As an AML transaction monitoring provider, SAS offers a full library of TBAML typologies that are pre-built and ready to deploy to its transaction monitoring solution. Furthermore, SAS deploys machine learning capabilities alongside anomaly detection modeling to bolster the detection of unusual account and transactional activity.

Table 1 shows Chartis’ rankings for SAS’s coverage against each of the completeness of offering criteria.

**Table 1: Completeness of offering – SAS (TBAML solutions, 2022)**

Completeness of offering criterion	Coverage
Data support	High
Depth of typology coverage	High
Breadth of analytical techniques	High
Workflow	High

Source: Chartis Research

### Vendor positioning in context – market potential

SAS performed well in market potential, as it has a broad base of clients currently deploying elements of its TBAML solution. According to the company, about 50 clients are currently deploying TBAML capabilities within their pre-existing SAS AML transaction monitoring systems. SAS has rolled out the fully featured TBAML platform to a handful of clients, and currently leads the market in this nascent area.

Chartis views the SAS TBAML growth strategy as robust, because of SAS’s strategy of cross-selling point components to address any part of an enterprise KYC/AML value chain. SAS’s reputation in TBAML is supported by its close partnership with EY in providing a managed service around its TBAML offering. With a reputation as a thought leader in TBML, EY is well-positioned to support SAS, which has a sizeable customer base and reputation in the industry. Chartis anticipates that the offering will attract significant interest with leading cross-border financial institutions, as TBAML requirements formalize in the next few years.

Table 2 shows Chartis’ rankings for SAS’s coverage against each of the market potential criteria.

**Table 2: Market potential – SAS (TBAML solutions, 2022)**

Market potential criterion	Coverage
Customer satisfaction	Medium
Market penetration	High
Growth strategy	Medium
Financials	High

Source: Chartis Research

### 3. Vendor context

#### Overview of relevant solutions/capabilities

Table 3 gives an overview of SAS and its TBAML solution.

The TRACK solution was co-developed by EY and SAS with one of the world’s largest banks. Given its portfolio in trade and treasury services, the institution needed to automate manual reviews, while improving their effectiveness in monitoring suspicious activity. While the cost takeout of inefficient operational processes was a factor, the bank was keen to reduce the time taken to approve trade packages and ultimately enhance the customer experience. The system has been designed to modernize the following three primary areas of trade finance risk:

- Red flag rules.
- Anti-boycott compliance.
- Sanctions screening.

**Red flag rules** are implemented by clients, based on known typologies for TBML risks (e.g., FATF). The rules-based approach was prone to large numbers of false positives, lacked a holistic view of activity and was difficult to administer. EY and

SAS identified a baseline of fraud and money laundering risks, with the goal of replacing about 100 checks with a single machine learning model. The SAS data science team performed feature engineering to include approximately 200 features. This enabled the scoring algorithm to analyze much more data than would be humanly possible. The ‘fraud/AML’ model scores the likelihood that a trade transaction merits further investigation. The model constantly learns from prior outcomes and maintains a profile of behavior for all entities covered by the system. The machine learning methods use an ensemble approach based on both supervised and unsupervised learning techniques. Natural language generation has also been used to generate explainable reason codes that help analysts understand why a transaction is scored for review.

**Anti-boycott compliance** is required by the US Department of Commerce to oppose restrictive trade practices or boycotts imposed by foreign countries against countries that are allies of the US government. In some cases, a party to a trade may give instructions that would violate boycott laws, such as to avoid doing business with a particular country. In many cases, these instructions may be vague or obfuscated using slang or code words. EY and SAS worked with the client to catalog an ontology of phrases and keywords consistent with boycott requests. SAS text analytics have

**Table 3: SAS – company information**

<b>Company</b>	SAS
<b>Headquarters</b>	Cary, NC, US
<b>Other offices</b>	SAS has offices in 56 countries worldwide.
<b>Description</b>	SAS is a leading provider of AI and advanced analytics solutions, and one of the largest privately held software companies in the world. Used by 91 of the top 100 companies in the global Fortune 500, SAS provides software and services that help customers around the globe transform data into intelligence.
<b>Solution</b>	The EYTRACK (Trade Risk Analytics Compliance Kit), which is powered by SAS, is an advanced trade finance risk solution designed to automate manual tasks and improve the accuracy of detection of TBAML, sanctions risks and boycott violations. The system relies on a combination of text analytics and machine learning detection techniques to identify both fraud and money laundering risks.

Source: Chartis Research

been deployed to provide contextual analysis of terms and phrasing for anti-boycott, military dual use (MDU) goods, arms and munitions and other commodities.

**Sanctions screening** is an automated process that provides secondary screening of sanctions hits referred by the existing sanctions tool. SAS text mining and analytics are applied to refine the type of transaction and the geographic location. Noun extraction is applied to improve the matching accuracy, combined with a review of the prior history of entity pairs and outcomes. An automated matrix is applied to provide a confidence score to reduce manual review.

Results for the client's operations have been excellent, and include:

- Improvement in operational efficiency of more than 30%.
- Approximately 9 million trade transactions and 25 million related documents processed annually.
- Accuracy rates above 85% for the fraud/AML model.
- A 60% reduction in false positives by the sanctions screening module.

Overall, analyst error and fatigue have been eased with a repeatable and highly governed business process.

The solution helped to secure **SAS the FinCrime – Trade-based AML award** in Chartis' **RiskTech 100® 2022**.

## Vendor leading practices

The leading practices that support the EY TRACK system are based on:

- AI/machine learning interfaces that feature a low-code/no-code interface that supports the entire analytic lifecycle, from data to discovery to deployment. The system not only supports native SAS algorithms but can also manage open-source algorithms, giving users maximum flexibility to deploy their analytics strategies. Tools such as Visual Machine Learning automate many of the feature engineering steps required to create behavioral signatures. SAS supports machine learning, deep learning, computer

vision, text analytics and explainable AI routines within its native library of supported methods.

- Business orchestration services (SAS/BOSS) provide a central interface for managing asynchronous communications between the client's document imaging platform, sanctions referrals, payments messages and case management referral systems. The system supports API calls to multiple client systems and proprietary vendor systems to ease integration of data management and decisioning across trade and treasury services.
- Managed services supported by EY and SAS provide necessary model governance documentation, end-user documentation, application maintenance and ongoing improvements of the system to ensure compliance with industry regulations.
- Cloud-native architecture. The TRACK application has been ported onto SAS's Viya architecture, making the application much more agile and repeatable. Each of the modules can be containerized in a client's preferred cloud architecture (private/public/hybrid) to offer increased elasticity and availability.

## 4. Methodology

### Overview

Chartis is a research and advisory firm that provides technology and business advice to the global financial services industry. Chartis provides independent market intelligence regarding market dynamics, regulatory trends, technology trends, best practices, competitive landscapes, market sizes, expenditure priorities, and mergers and acquisitions. Chartis' RiskTech and FinTech Quadrants™ reports are written by experienced analysts with hands-on experience of selecting, developing and implementing financial technology solutions for a variety of international companies in a range of industries including banking, insurance and capital markets. The findings and analyses in our quadrant reports reflect our analysts' considered opinions, along with research into market trends, participants, expenditure patterns, and best practices.

Chartis seeks to include RiskTech and FinTech vendors that have a significant presence in a given target market. The significance may be due to market penetration (e.g., a large client base) or innovative solutions. Chartis uses detailed 'vendor evaluation forms' and briefing sessions to collect information about each vendor. If a vendor chooses not to respond to a Chartis request for information, Chartis may still include the vendor in the report. Should this happen, Chartis will base its opinion on direct data collated from technology buyers and users, and from publicly available sources.

Chartis' research clients include leading financial services firms and Fortune 500 companies, leading consulting firms and financial technology vendors. The vendors evaluated in our quadrant reports can be Chartis clients or firms with whom Chartis has no relationship.

Chartis evaluates all vendors using consistent and objective criteria, regardless of whether or not they are Chartis clients. Chartis does not give preference to its own clients and does not request compensation for inclusion in a quadrant report, nor can vendors influence Chartis' opinion.

### Selection criteria

In selecting vendors for this report, we focused on TBAML capabilities. While all of the vendors we

assessed have core businesses outside TBAML use cases, in reality TBAML is a nascent product category, a fact highlighted by the customers addressed by various vendors in the market. We made the choice to focus on TBAML because we understand that these capabilities are often overlooked in the discussion of trade compliance, which includes trade sanctions and export controls technology. As a result, we wanted to isolate this functionality to ensure it received the attention it deserves.

In order to better understand TBAML solutions, we considered both the technical architectures required to automate a TBAML process and the functional approaches required to augment knowledge-based processes currently performed by expert TBML analysts. These capabilities included, but were not limited to:

- Business KYC and entity resolution.
- Transactional counterparty KYC and AML.
- Transactional AML analytics.
- Asset-based AML analytics.

### Briefing process

We conducted face-to-face and/or web-based briefings with each vendor.<sup>2</sup> During these sessions, Chartis experts asked in-depth, challenging questions to establish the real strengths and weaknesses of each vendor. Vendors provided Chartis with:

- A business update – an overview of solution sales and client satisfaction.
- A product update – an overview of relevant solutions and R&D roadmaps.
- A product demonstration – key differentiators of their solutions relative to those of their competitors.

In addition to briefings, Chartis used other third-party sources of data, such as conferences, academic and regulatory studies, and publically available information.

<sup>2</sup> Note that vendors do not always respond to requests for briefings; they may also choose not to participate in the briefings for a particular report.

## Evaluation criteria

We develop specific evaluation criteria for each piece of quadrant research from a broad range of overarching criteria, outlined below. By using domain-specific criteria relevant to each individual risk, we can ensure transparency in our methodology, and allow readers to fully appreciate the rationale for our analysis. The specific criteria used for TBAML solutions are shown in Table 4.

### Completeness of offering

- Depth of functionality.** The level of sophistication and amount of detailed features in the software product (e.g., advanced risk models, detailed and flexible workflow, domain-specific content). Aspects assessed include: innovative functionality, practical relevance of features, user-friendliness, flexibility, and embedded intellectual property. High scores are given to those firms that achieve an appropriate balance between sophistication and user-friendliness. In addition, functionality linking risk to performance is given a positive score.
- Breadth of functionality.** The spectrum of requirements covered as part of an enterprise risk management system. This will vary for each subject area, but special attention will be given to functionality covering regulatory requirements, multiple risk classes, multiple asset classes, multiple business lines, and multiple user types (e.g. risk analyst, business manager, CRO, CFO, Compliance Officer). Functionality within risk management systems and integration between front-office (customer-facing) and middle/back office (compliance, supervisory and governance) risk management systems are also considered.
- Data management and technology infrastructure.** The ability of risk management systems to interact with other systems and

handle large volumes of data is considered to be very important. Data quality is often cited as a critical success factor and ease of data access, data integration, data storage, and data movement capabilities are all important factors. Particular attention is given to the use of modern data management technologies, architectures and delivery methods relevant to risk management (e.g., in-memory databases, complex event processing, component-based architectures, cloud technology, and Software as a Service). Performance, scalability, security and data governance are also important factors.

- Risk analytics.** The computational power of the core system, the ability to analyze large amounts of complex data in a timely manner (where relevant in real time), and the ability to improve analytical performance are all important factors. Particular attention is given to the difference between 'risk' analytics and standard 'business' analytics. Risk analysis requires such capabilities as non-linear calculations, predictive modeling, simulations, scenario analysis, etc.
- Reporting and presentation layer.** The ability to present information in a timely manner, the quality and flexibility of reporting tools, and ease of use, are important for all risk management systems. Particular attention is given to the ability to do ad-hoc 'on-the-fly' queries (e.g., 'what-if' analysis), as well as the range of 'out of the box' risk reports and dashboards.

### Market potential

- Business model.** Includes implementation and support and innovation (product, business model and organizational). Important factors include size and quality of implementation team, approach to software implementation, and post-sales support and training. Particular attention is given to 'rapid' implementation methodologies and 'packaged' services offerings. Also evaluated

**Table 4: Evaluation criteria for Chartis' TBAML solutions report**

Completeness of offering	Market potential
Data support	Customer satisfaction
Depth of typology coverage	Market penetration
Breadth of analytical techniques	Growth strategy
Workflow	Financials

Source: Chartis Research

are new ideas, functionality and technologies to solve specific risk management problems. Speed to market, positioning, and translation into incremental revenues are also important success factors in launching new products.

- **Market penetration.** Volume (i.e. number of customers) and value (i.e. average deal size) are considered important. Rates of growth relative to sector growth rates are also evaluated. Also covers brand awareness, reputation, and the ability to leverage current market position to expand horizontally (with new offerings) or vertically (into new sectors).
- **Financials.** Revenue growth, profitability, sustainability, and financial backing (e.g. the ratio of license to consulting revenues) are considered key to scalability of the business model for risk technology vendors.
- **Customer satisfaction.** Feedback from customers is evaluated, regarding after-sales support and service (e.g. training and ease of implementation), value for money (e.g. price to functionality ratio) and product updates (e.g. speed and process for keeping up to date with regulatory changes).
- **Growth strategy.** Recent performance is evaluated, including financial performance, new product releases, quantity and quality of contract wins, and market expansion moves. Also considered are the size and quality of the sales force, sales distribution channels, global presence, focus on risk management, messaging, and positioning. Finally, business insight and understanding, new thinking, formulation and execution of best practices, and intellectual rigor are considered important.

## Quadrant construction process

Chartis constructs its quadrants after assigning scores to vendors for each component of the Completeness of Offering and Market Potential criteria. By aggregating these values, we produce total scores for each vendor on both axes, which are used to place the vendor on the quadrant.

### Definition of quadrant boxes

Chartis' quadrant reports do not simply describe one technology option as the best solution in a particular area. Our ranking methodology is designed to highlight which solutions are best for specific buyers, depending on the technology they

need and the implementation strategy they plan to adopt. Vendors that appear in each quadrant have characteristics and strengths that make them especially suited to that particular category, and by extension to particular users' needs.

### **Point solutions**

- Point solutions providers focus on a small number of component technology capabilities, meeting a critical need in the risk technology market by solving specific risk management problems with domain-specific software applications and technologies.
- They are often strong engines for innovation, as their deep focus on a relatively narrow area generates thought leadership and intellectual capital.
- By growing their enterprise functionality and utilizing integrated data management, analytics and Business Intelligence (BI) capabilities, vendors in the point solutions category can expand their completeness of offering, market potential and market share.

### **Best-of-breed**

- Best-of-breed providers have best-in-class point solutions and the ability to capture significant market share in their chosen markets.
- They are often distinguished by a growing client base, superior sales and marketing execution, and a clear strategy for sustainable, profitable growth. High performers also have a demonstrable track record of R&D investment, together with specific product or 'go-to-market' capabilities needed to deliver a competitive advantage.
- Because of their focused functionality, best-of-breed solutions will often be packaged together as part of a comprehensive enterprise risk technology architecture, co-existing with other solutions.

### **Enterprise solutions**

- Enterprise solution providers typically offer risk management technology platforms, combining functionally rich risk applications with comprehensive data management, analytics and BI.
- A key differentiator in this category is the openness and flexibility of the technology

architecture and a 'toolkit' approach to risk analytics and reporting, which attracts larger clients.

- Enterprise solutions are typically supported with comprehensive infrastructure and service capabilities, and best-in-class technology delivery. They also combine risk management content, data and software to provide an integrated 'one stop shop' for buyers.

### **Category leaders**

- Category leaders combine depth and breadth of functionality, technology and content with the required organizational characteristics to capture significant share in their market.
- They demonstrate a clear strategy for sustainable, profitable growth, matched with best-in-class solutions and the range and diversity of offerings, sector coverage and financial strength to absorb demand volatility in specific industry sectors or geographic regions.
- They will typically benefit from strong brand awareness, a global reach, and strong alliance strategies with leading consulting firms and systems integrators.

## 5. How to use research and services from Chartis

In addition to our industry reports, Chartis offers customized information and consulting services. Our in-depth knowledge of the risk technology market and best practices allows us to provide high-quality and cost-effective advice to our clients. If you found this report informative and useful, you may be interested in the following services from Chartis.

### Advisory services

Advisory services and tailored research provide a powerful way for Chartis clients to leverage our independent thinking to create and enhance their market positioning in critical areas.

Our offering is grounded in our market-leading research, which focuses on the industry and regulatory issues and drivers, critical risk technologies and leading market practices impacting our sector. We use our deep insight and expertise to provide our clients with targeted market and industry analysis, tailoring content to assess the impact and potential of relevant regulatory and business issues, and highlighting potential solutions and approaches.

Chartis' advisory services include:

#### Market dynamics

The markets that our clients – vendors, institutions and consultants – address are changing at an ever-increasing pace. Understanding the market dynamics is a critical component of success, and Chartis uses its deep industry and technical knowledge to provide customized analysis of the specific issues and concerns our clients are facing.

#### Market positioning

In today's highly competitive market, it is no longer enough simply to have a leading product or solution. Buyers must be able to appreciate the differentiating capabilities of your brand and solutions, and understand your ability to help them solve their issues.

Working with our clients, we generate compelling, independent co-branded research, targeting critical business issues. This helps our clients to position their solutions effectively, 'own' key issues and stand out from the crowd.

Collaborating closely with our clients, we develop pragmatic, resonant thought-leadership papers with immediate industry relevance and impact.

Our offerings include:

- **Co-branded research** on key market topics to provide a unique and compelling point of view that addresses a key industry driver and highlights the relevant issues. Reports can be tailored to varying levels of depth and can be powered by quantitative survey fieldwork, qualitative industry interviews, our deep domain expertise or a blend of all three.
- **Chairing roundtables and/or facilitating events and workshops** to support clients in hosting compelling events that put them at the heart of the discussion.
- **Targeted marketing through our sister brands**, leveraging the power of our parent group – Infopro Digital – to reach across leading brands such as Risk.net, WatersTechnology, FX Week and Central Banking.

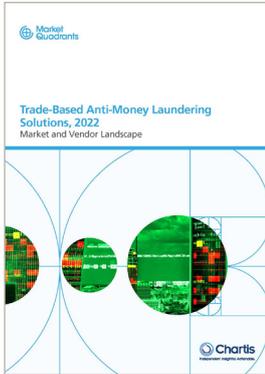
#### Competitor analysis

Our unique focus on risk technology gives us unrivalled knowledge of the institutions and vendors in the sector, as well as those looking to enter it. Through our industry experts, Chartis clients can tap our insights to gain a much deeper understanding of their competitors and the strategies they should pursue to better position themselves for success.

#### Regulatory impact analysis

The analysis and assessment of regulatory change and implementation is one of Chartis' core strengths. We can apply our insights to assess the impact of change on the market – either as it applies to vendors and the institutions they serve, or on a client's specific product and customer base. We can also provide insights to guide product strategy and associated go-to-market activities, which we can execute for internal use to drive our clients' strategy or as a co-branded positioning paper to raise market awareness and 'buzz' around a particular issue.

## 6. Further reading



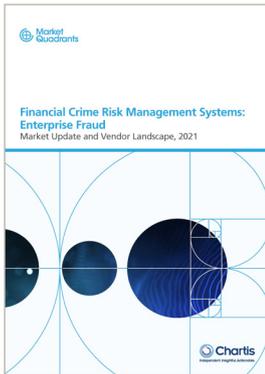
**Trade-Based Anti-Money Laundering Solutions, 2022: Market and Vendor Landscape**



**KYC/AML Software Solutions, 2020: Market Update and Vendor Landscape**



**KYC/AML Data Solutions, 2020: Market and Vendor Landscape**



**Financial Crime Risk Management Systems: Enterprise Fraud; Market Update and Vendor Landscape, 2021**



**Big Bets 2022**



**RiskTech100® 2022**

For all these reports, see [www.chartis-research.com](http://www.chartis-research.com)