About Chartis

Chartis Research is the leading provider of research and analysis on the global market for risk technology. It is part of Infopro Digital, which owns market-leading brands such as Risk and Waters Technology. Chartis’s goal is to support enterprises as they drive business performance through improved risk management, corporate governance and compliance and to help clients make informed technology and business decisions by providing in-depth analysis and actionable advice on virtually all aspects of risk technology. Areas of expertise include:

- Credit risk
- Operational risk and governance, risk and compliance (GRC)
- Market risk
- Asset and liability management (ALM) and liquidity risk
- Energy and commodity trading risk
- Financial crime including trader surveillance, anti-fraud and anti-money laundering
- Cyber risk management
- Insurance risk
- Regulatory requirements including Basel 2 and 3, Dodd-Frank, MiFID II and Solvency II

Chartis is solely focused on risk and compliance technology, which gives it a significant advantage over generic market analysts.

The firm has brought together a leading team of analysts and advisors from the risk management and financial services industries. This team has hands-on experience of implementing and developing risk management systems and programs for Fortune 500 companies and leading consulting houses.

Visit [www.chartis-research.com](http://www.chartis-research.com) for more information.

Join our global online community at [www.risktech-forum.com](http://www.risktech-forum.com).

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1. In this research paper

This Chartis research paper includes the following:

- RiskTech Quadrant® for enterprise fraud technology solutions
- SAS enterprise fraud technology – capabilities and market position
- RiskTech Quadrant® methodology
2. RiskTech Quadrant® for enterprise fraud technology solutions

Figure 1: RiskTech Quadrant® for enterprise fraud technology solutions, 2017


Figure 1 above describes Chartis’s view of the vendor landscape for enterprise fraud technology solutions.

The RiskTech Quadrant® is a proprietary methodology developed specifically for the risk technology marketplace. It takes into account the product and technology capabilities of vendors, as well as their organizational capabilities.

Appendix A sets out the generic methodology and criteria used for the RiskTech Quadrant®.

Specifically, we have considered the following as particularly important:
Completeness of offering

Platform

- **Data management** – including the strength of the data platform, unstructured and real-time data management, validation and audit.

- **Rules engines** – including filters, claim histories, user rules and definitions, and custom rules building capabilities.

- **Analytics/modeling** – including machine learning, data mining, risk scoring, natural language processing, and model risk management.

- **Workflow engine** – including Robotic Process Automation (RPA) and case management capabilities.

- **Reporting/Business Intelligence (BI)** – including dashboards and monitoring, drill-down, tabular and graphical displays, and exporting.

- **Entity resolution and hierarchy modeling** – including network resolution, mapping and relationship building.

Financial crime risk management (FCRM)

- **Anti-fraud** – including screening technology, payment and internal fraud, fraud detection techniques and scenarios, and alert management.

- **Anti-Money Laundering (AML)** – including terrorist finance, blacklist management, alert management, search and transaction monitoring.

- **Know Your Customer (KYC)** – including identity resolution, regulatory reporting, KYC risk scores, customer profile enrichment and customer lifecycle management.

- **Watchlist monitoring** – including screening technology, business rules, matching algorithms, and integration.

- **Trader surveillance** – including market abuse rules, e-comms monitoring, low-latency reporting, trade volume reporting, and asset coverage.

Market potential

- **Growth strategy and brand.**

- **Post-sales implementation and support** capabilities.

- **Strategy for, and investment in, continued innovation** in risk technology relating to FCRM.

- **Domain knowledge** and thought leadership in FCRM.
• **Potential value of FCRM deals** (i.e. Tier 1 clients vs. Tier 2 or Tier 3 clients).

• **Scalability of business model** (i.e. repeatable sales and delivery capabilities).

• **Geographical reach.**

• **Financial strength.**
3. SAS enterprise fraud technology – capabilities and market position

Founded in 1976, SAS is one of the largest software companies in the world, with almost 14,000 employees and customers in more than 140 countries. Its solution set covers a range of enterprise risk management needs, including credit risk, market risk, asset liability management, operational risk/governance, risk management and compliance (GRC), liquidity risk and financial crime. SAS supports banks across a range of fraud and financial crime risks, via a comprehensive suite of solutions delivered through a global network of professional services and system integration partners.

Differentiating elements of SAS’s solution include the significant investment in industry and fraud prevention technology that underpins it, and its enterprise approach. SAS’s data aggregation capabilities, combined with analytics and visualization, support a holistic view of financial crime risk management.

The analytics lifecycle is managed on Hadoop, and the SAS Event Stream Processing engine can be used to make complex data transformations. Transactions and payments can be monitored in real time, and model risk management capabilities enable inventory, documenting, communication and audit solutions. SAS has developed consortium and custom model services to tackle payment fraud, so it can devise custom models for clients, deployed on the cloud, while retaining oversight.

Machine learning models can also be applied to behavioral analytics – during the ‘Predictive Alert Analytics’ process, analytical models are applied to all alerts generated by the system. SAS provides ‘Signature’ templates that are presented to all models, and which may contain a set of risk variables. Alerts are scored, and high-scoring alerts are triaged for investigation.

The Investigation User Interface manages and disposes of alerts, while the Query functionality allows end users to view information on alerts, accounts, customers and watchlists, and Case Packaging functionality allows multiple alerts to be packaged as a single alert. Actions and disposition codes are captured for review and audit purposes, and the interface supports comments, attachments and automated regulatory filing. A workflow-based environment is used to manage alert triage; components can receive alerts from multiple detection systems (including third parties). Enterprise case management is also offered as integrated functionality.
4. Appendix A: RiskTech Quadrant® methodology

Chartis is a research and advisory firm that provides technology and business advice to the global risk management 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’s RiskTech Quadrant® reports are written by experienced analysts with hands-on experience of selecting, developing, and implementing risk management systems for a variety of international companies in a range of industries including banking, insurance, capital markets, energy, and the public sector.

Chartis’s research clients include leading financial services firms and Fortune 500 companies, leading consulting firms, and risk technology vendors. The risk technology vendors that are evaluated in the RiskTech Quadrant® reports can be Chartis clients or firms with whom Chartis has no relationship. Chartis evaluates all risk technology vendors using consistent and objective criteria, regardless of whether or not they are a Chartis client.

Where possible, risk technology vendors are given the opportunity to correct factual errors prior to publication, but cannot influence Chartis’s opinion. Risk technology vendors cannot purchase or influence positive exposure. Chartis adheres to the highest standards of governance, independence, and ethics.

Inclusion in the RiskTech Quadrant®

Chartis seeks to include risk technology vendors that have a significant presence in a given target market. The significance may be due to market penetration (e.g. large client-base) or innovative solutions. Chartis does not give preference to its own clients and does not request compensation for inclusion in a RiskTech Quadrant® report. Chartis utilizes detailed and domain-specific ‘vendor evaluation forms’ and briefing sessions to collect information about each vendor. If a vendor chooses not to respond to a Chartis vendor evaluation form, Chartis may still include the vendor in the report. Should this happen, Chartis will base its opinion on direct data collated from risk technology buyers and users, and from publicly available sources.

Research process

The findings and analyses in the RiskTech Quadrant® reports reflect our analysts' considered opinions, along with research into market trends, participants, expenditure patterns, and best practices. The research lifecycle usually takes several months, and the analysis is validated through several phases of independent verification. Figure 2 below describes the research process.
Chartis typically uses a combination of sources to gather market intelligence. These include (but are not limited to):

- **Chartis vendor evaluation forms.** A detailed set of questions covering functional and non-functional aspects of vendor solutions, as well as organizational and market factors. Chartis’s vendor evaluation forms are based on practitioner level expertise and input from real-life risk technology projects, implementations, and requirements analysis.

- **Risk technology user surveys.** As part of its ongoing research cycle, Chartis systematically surveys risk technology users and buyers, eliciting feedback on various risk technology vendors, satisfaction levels, and preferences.
• **Interviews with subject matter experts.** Once a research domain has been selected, Chartis undertakes comprehensive interviews and briefing sessions with leading industry experts, academics, and consultants on the specific domain to provide deep insight into market trends, vendor solutions, and evaluation criteria.

• **Customer reference checks.** These are telephone and/or email checks with named customers of selected vendors to validate strengths and weaknesses, and to assess post-sales satisfaction levels.

• **Vendor briefing sessions.** These are face-to-face and/or web-based briefings and product demonstrations by risk technology vendors. During these sessions, Chartis experts ask in depth, challenging questions to establish the real strengths and weaknesses of each vendor.

• **Other third-party sources.** In addition to the above, Chartis uses other third-party sources of information such as conferences, academic and regulatory studies, and collaboration with leading consulting firms and industry associations.

**Evaluation criteria**

The RiskTech Quadrant® (see Figure 3) evaluates vendors on two key dimensions:

1. Completeness of offering
2. Market potential

*Figure 3: RiskTech Quadrant®*

Source: Chartis Research
The generic evaluation criteria for each dimension are set out below. In addition to these generic criteria, Chartis utilizes domain-specific criteria relevant to each individual risk, which are available on request. This ensures total transparency in our methodology and allows readers to fully appreciate the rationale for our analysis.

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, 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

- **Market penetration.** Both volume (i.e. number of customers) and value (i.e. average deal size) are considered important. Also, rates of growth relative to sector growth rates are evaluated.

- **Brand.** Brand awareness, reputation, and the ability to leverage current market position to expand horizontally (with new offerings) or vertically (into new sectors) are evaluated.

- **Momentum.** Performance over the previous 12 months is evaluated, including financial performance, new product releases, quantity and quality of contract wins, and market expansion moves.

- **Innovation.** New ideas, functionality, and technologies to solve specific risk management problems are evaluated. Developing new products is only the first step in generating success. Speed to market, positioning, and translation into incremental revenues are critical success factors for exploitation of the new product. Chartis also evaluates business model or organizational innovation (i.e. not just product innovation).

- **Customer satisfaction.** Feedback from customers 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) is evaluated.

- **Sales execution.** The size and quality of sales force, sales distribution channels, global presence, focus on risk management, messaging, and positioning are all important factors.

- **Implementation and support.** 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.

- **Thought-leadership.** Business insight and understanding, new thinking, formulation and execution of best practices, and intellectual rigor are considered important by end users.

- **Financial strength and stability.** Revenue growth, profitability, sustainability, and financial backing (e.g. the ratio of license to consulting revenues) is considered as key to scalability of the business model for risk technology vendors.
Quadrant descriptions

Point solutions. Providers of point solutions focus on a relatively small number (typically two or three) of component technology capabilities. These vendors meet a very important need in the risk technology market by solving specific risk management problems with domain-specific software applications and technologies. Point solution providers also provide a strong engine for innovation as their deep focus on relatively narrow subject areas generates thought leadership and intellectual capital. These vendors often have gaps relating to the broader enterprise risk management functionality and do not have the integrated data management, analytics, and business intelligence capabilities found in enterprise technology platforms. Furthermore, these vendors have not yet developed the organizational characteristics for capturing significant market share. Their growth is often constrained by lack of financial and human resources, or relatively weak sales and marketing execution.

Best-of-breed. Providers of best-of-breed solutions have best-in-class point solution capabilities together with the organizational characteristics to capture significant market share in their chosen target markets. Providers of best-of-breed solutions usually have a growing client base, superior sales and marketing execution, and a clear strategy for sustainable profitable growth. Best-of-breed solution providers can also demonstrate a healthy rate of investment in research and development, and have specific product or ‘go-to-market’ capabilities that give them a competitive advantage. Best-of-breed solution vendors have depth of functionality, but lack the breadth of technology and functionality required to provide an integrated enterprise-wide risk management system. Best-of-breed solutions are often considered as a subset of more comprehensive risk technology architecture and are required to co-exist with other third-party technologies or in-house systems to provide an integrated solution to a given risk management problem.

Enterprise solutions. Enterprise solution providers have a clear strategy and vision for providing risk management technology platforms. They are characterized by the depth and breadth of their technology capabilities, combining functionally rich risk applications with comprehensive data management, risk analytics, and business intelligence technologies. A key differentiator is the openness and flexibility of their technology architecture and their ‘tool-kit’ approach to risk analytics and reporting. Enterprise solution providers support their technology solutions with comprehensive infrastructure and service capabilities, ensuring best-in-class technology delivery. Moreover, enterprise solution providers have clear strategies for combining risk management content and data with their risk management software to provide an integrated ‘one-stop-shop’ for risk technology buyers.

Category leaders. Category leaders are risk technology vendors that have the necessary depth and breadth of functionality, technology, and content, combined with the organizational characteristics to capture significant market share by volume and value. Category leaders can demonstrate a clear strategy for sustainable, profitable growth, matched with best-in-class solutions. Category leaders also have the range and diversity of offerings, sector coverage, and financial strength to be able to absorb demand volatility in specific industry sectors or geographic regions. These vendors benefit from strong brand awareness, a global reach, and strong alliance strategies with leading consulting firms and systems integrators. Category leaders can also demonstrate an appetite for ongoing investment in innovation, often matched by deep pockets and a strong financial performance. Ultimately, category leaders combine deep domain knowledge in various risk topics with deep technology assets and capabilities. They can demonstrate this by addressing the needs of very large clients with complex risk management and technology requirements, as well as addressing the needs of smaller clients with standardized requirements looking for integrated solutions from a single vendor.
5. Further reading

- Data Integrity and Control Solutions in Financial Services 2016
- RiskTech100 2017
- Enterprise GRC Solutions: Market Update 2017
- Spotlight on Conduct Risk Management
- Spotlight on Trade Surveillance in Energy Trading

For all these reports see www.chartis-research.com.