

RiskTech Quadrant® 2016

Credit risk management systems for the banking book



About Chartis

Chartis is the leading provider of research and analysis on the global market for risk technology. It is part of Incisive Media which owns market-leading brands such as Risk and Waters Technology. Chartis's goal is to support enterprises as they drive business performance through better 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 / 3, Dodd-Frank, EMIR and Solvency II

Chartis is solely focused on risk and compliance technology giving it significant advantage over generic market analysts.

Chartis 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.

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Join our global online community at www.risktech-forum.com

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In this research paper

This Chartis research paper covers the following:

- RiskTech Quadrant® for credit risk management systems for the banking book 2016
- SAS credit risk management capabilities and market position
- RiskTech Quadrant® methodology

RiskTech Quadrant® for credit risk management systems for the banking book 2016

Figure 1: RiskTech Quadrant® for credit risk management systems for the banking book 2016



Source: *Chartis Credit Risk Management Systems for the Banking Book 2016*

Figure 1 above describes Chartis's view of the vendor landscape for credit risk management systems for the banking book 2016.

The RiskTech Quadrant® is a proprietary methodology developed specifically for the risk technology marketplace. It takes into account 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 criteria as particularly important:

Completeness of offering:

- Data management, including flexible data model, data reconciliation, and data validation
- Integration of risk and finance data
- Credit risk data aggregation
- Flexible analytics engine for calculating PD, LGD, EAD
- Enterprise stress testing
- Model risk management and governance tools
- Flexible and automated regulatory and internal reporting
- Regulatory and economic capital calculations
- Real-time BI tools
- Performance and scalability of the core technology (e.g. use of high performance computing and analytics capabilities, such as advanced database technologies, in-memory analytics, and grid computing)
- Linkage to related systems (e.g. Unit management, Collateral management, ALM, Treasury, Fraud management, Operational risk)

Market Potential:

- Existing banking credit risk management client-base
- Track record of delivering successful credit risk management projects
- Growth strategy and brand
- Post-sales implementation and support capabilities
- Strategy for and investment in continued innovation in risk technology relating to credit risk management
- Domain knowledge and thought leadership in risk and finance
- Potential volume of credit risk management for banking wins
- Potential value of credit risk management 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

SAS credit risk management capabilities and market position

With 40 years of analytics experience, SAS solutions are used by more than 3,500 financial institutions worldwide, including 97 percent of the banks on the Fortune Global 500[®]. The SAS solution set covers a range of enterprise risk management needs including key areas in Enterprise Stress Testing, IFRS 9, Model Governance, Regulatory/Economic Capital Measurement & Management and Credit Scoring/Decision Management.

Within the Credit Risk focus areas SAS' offerings include SAS Credit Scoring, SAS Regulatory Risk Management, and SAS Model Implementation Platform.

The Credit Scoring solution is fully integrated into SAS' banking data model and provides scorecard and model development. It provides out-of-the-box functionality and is able to map customer data to the banking data model through an ETL tool to create a credit risk data mart. Scorecards can be developed using data mining techniques and validated by back-testing. Champion/challenger processes can also be used to provide feedback and improve scoring models. Users build scorecards through a GUI to create or add variables that should be measured.

Scorecards can be shared to enable collaborative model development and an audit trail provides transparency. Workflow is handled by the Model Manager tool that can be integrated into Credit Scoring for Banking. The integration with other SAS systems aims to reduce project risk and model risk and to provide better performance. Reports for individual models can be produced, alongside regulatory reports.

The SAS Regulatory Risk Management (RRM) solution can help a bank or financial institution comply with Basel III regulations around capital adequacy and liquidity risk. The solution provides an ecosystem comprising a banking data model; a risk engine with RWA calculations for Basel II and III for capital; liquidity risk; allows extension to new regulatory requirements such as Basel IV; regulatory reporting with out-of-the-box content for many jurisdictions; collateral optimization tools; and a workflow engine. The solution also calculates portfolio credit risk measures and economic capital using advanced credit risk models such as actuarial models, multivariate Merton models, and reduced form models. The solution is being extended to meet the new requirements for market risk known as the Fundamental Review of the Trading Book (FRTB), and the pillar II charge for Interest Rate Risk in the Banking Book (IRRBB).

The single data model allows users to get a consolidated view of customers across the enterprise. The risk analytics engine has capabilities to calculate a range of metrics including exposures, risk weights, capital ratios, and effects on collateral. Credit RWA calculations can be performed using the standardized or advanced approaches. Counterparty credit risk, including CVA and wrong-way risk can also be calculated. SAS risk analytics is an open box platform that allows users to select and configure different risk methodologies, visualize all assumptions, and understand how calculations are reached.

Management and regulatory reports can be generated automatically and built into a report submission workflow that transmits each report to levels of approval from line of business up to the approving authority. Regulatory reports include Basel III reports and reports for other jurisdictions, including the United States and the European Union. Reporting frameworks can be altered and extended.

SAS Model Implementation Platform provides a controlled environment where complex systems of loan-level risk models can be implemented. It's built for model development and implementation teams that are responsible for models that support activities like stress testing, ALLL reserving, IFRS 9 and loan valuation.

Appendix A – RiskTech Quadrant® methodology

Independence

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.

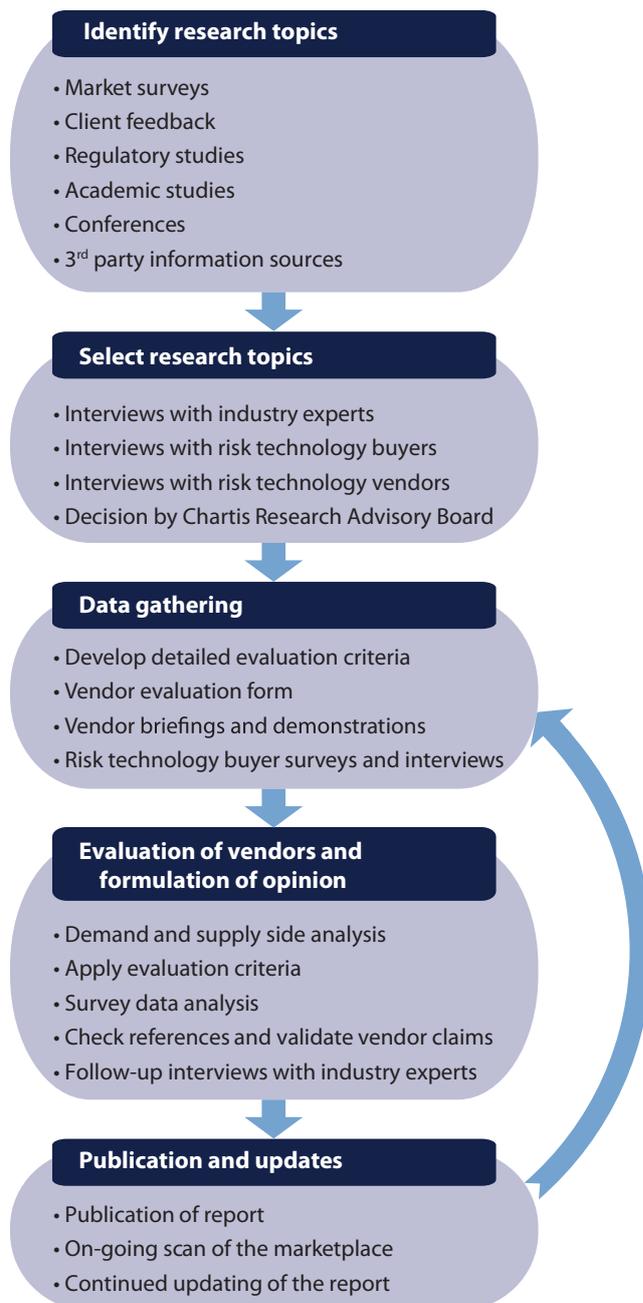
Inclusion in the RiskTech Quadrant®

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 vendors 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 life cycle usually takes several months, and the analysis is validated through several phases of independent verification. Figure 2, below, describes the research process.

Figure 2: RiskTech Quadrant® 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.

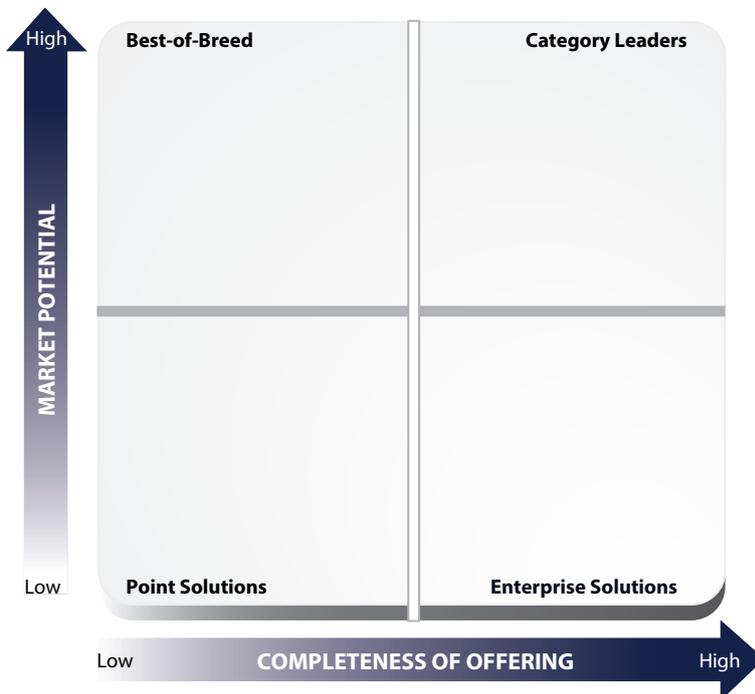
- *Interviews with subject matter experts* – Once a research domain has been selected, Chartis undertakes comprehensive interviews and briefing sessions with leading industry experts, academics, and consultants on the specific domain to provide deep insight into market trends, vendor solutions, and evaluation 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® evaluates vendors on two key dimensions:

1. Completeness of offering
2. Market potential

Figure 3: RiskTech Quadrant®



The generic evaluation criteria for each dimension are set out below. In addition to the generic criteria below, Chartis utilizes domain-specific criteria relevant to each individual risk. These are detailed in the individual Vendor Evaluation Forms, which are published as an appendix to each report. 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.

Further reading

- Global Risk IT Expenditure in Financial Services 2016
- Risk Data Aggregation and Reporting Solutions 2016
- RiskTech100® 2016
- Enterprise Stress Testing Systems 2015

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