

Data Integrity and Control in Financial Services 2016

Gresham Vendor Highlights



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- Cyber risk management
- Insurance risk
- Regulatory requirements including Basel 2 and 3, Dodd-Frank, EMIR and Solvency II

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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.

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1. Executive summary

This report provides an independent evaluation and description of Gresham's leading practices and competitive position. Our analysis is based on information in the Chartis report *Data Integrity and Control in Financial Services 2016*, and our FinTech Quadrant™ for data integrity and control.

We categorize Gresham as a vendor that focuses on data reconciliation and control (see vendor categories on page 17). Data reconciliation is a fundamental pillar of data integrity and control, and permeates through all aspects of Chartis's data integrity and control value chain.

This report also includes brief coverage of:

- The main demand-side trends in this nascent market, with an analysis of the key business and regulatory challenges.
- The supply-side dynamics, with a focus on the vendor landscape for data integrity and control solutions.

Data integrity has now become a critical consideration in the financial services (FS) sector, as reduced profit margins, regulatory pressure and the explosion of data threaten to overwhelm current approaches to the issue. For several internal and external reasons, financial institutions (FIs) now need higher quality data and better processes to analyze it. Technology budgets are tight, however, and FIs have to get more out of their current infrastructure. Boosted by advances in technology such as low-cost computing, an emerging sector of solutions is starting to address this need.

Largely as a result of these factors, Chartis now defines 'data integrity and control' as a category of technology solutions in its own right. In our view, the data integrity value chain for FIs has six distinct elements:

- Matching
- Quality
- Consistency
- Transformation
- Integrity
- Distribution

Key dynamics in the market and in enterprises are creating demands for new and enhanced capabilities across the data integrity value chain. Vendors will attempt to address these, either directly or through a combination of offerings. This is a fertile market, and one that will experience several important and notable shifts in the coming months and years.

2. Gresham: Vendor Highlights

Company information

Table 1 summarizes the key facts about Gresham and its offerings in the market for data integrity and control solutions.

Table 1: Gresham - company information

Company:	Gresham
Headquarters:	London (UK)
Other offices:	UK (Southampton and Bristol), North America (New York) and Asia Pacific (Singapore, Sydney, Melbourne, Kuala Lumpur).
Description:	A financial technology company, listed on the main market of the London Stock Exchange. Provides enterprise data integrity and control solutions to some of the world's largest financial institutions.
Services/offerings:	Gresham offers a portfolio of business applications on its Clareti platform: Clareti Transaction Control Clareti Data Accelerator Clareti Accounts Receivable Management Clareti Loan Control Gresham also offers a full portfolio of consulting services and 24/7 global support. All of its products are available on its Clareti-as-a-Service platform.

Competitive position

Figure 1 shows Chartis's view of the vendor landscape for data integrity and control technology solutions. In the FinTech Quadrant™, Gresham is positioned as a Category Leader. While it scores 'Medium' in most of the categories in our 'Completeness of Offering' rating (see below), it scores highly on governance, automation and audit. It also has high customer satisfaction, a strong growth strategy, and high enterprise readiness.

The FinTech Quadrant™ is a proprietary methodology developed specifically for the risk technology marketplace. It takes into account vendors' product and technology capabilities, as well as their organizational capabilities. Appendix A sets out the generic methodology and criteria used for the FinTech Quadrant™. Specifically, we have considered the following criteria as particularly important:

Completeness of Offering. This assessment looks at a number of criteria, including the following:

- The functionality of solutions, focusing primarily on the control of data and metadata in FIs' business processes.
- How well solutions interrogate the data landscape and identify the location of data integrity gaps.
- The general level of automation, across all Completeness of Offering criteria. This is also a key indicator of the latest data integrity and control solutions.

Market Potential. This assessment looks at a vendor's existing client base (as it can highlight a vendor's market potential), and considers brand recognition, financial strength, geographic reach, customer satisfaction and a vendor's organizational strength.

Tables 2 and 3 show Gresham's ratings for Completeness of Offering and Market Potential.

Figure 1: FinTech Quadrant™ for data integrity and control solutions



Source: Chartis Research

Table 2: Completeness of offering - Gresham

Completeness of Offering	Coverage
Governance – The control of data and metadata (semantic structures, graphs, statistical frameworks) surrounding the controlled process	High
Discovery and reporting – The location and escalation of data integrity gaps/issues	Medium
Automation	High
Audit	High
Integration support	Medium
Data insight – The ability to distinguish specific natures or types of data	Medium
Enterprise readiness – eg, security and data retention	Medium
Data types – The ability to handle structured and unstructured data	Medium
Alerting and workflow – The capability of the workflow engine and alerts upon the failure of activities	Medium
Semantic integrity, control and reconciliation – The consistency of data definitions across processes	Medium
Statistical integrity, control and reconciliation – Statistical checks for consistency across processes and over time	High

Source: Chartis Research

Table 3: Market potential - Gresham

Market Potential	Level
Customer satisfaction	High
Market penetration	Medium
Growth strategy	High
Financials	Medium
Business model	Medium
Enterprise readiness	High
Multi-sector	Medium
Roadmap	High

Source: Chartis Research

Leading practices

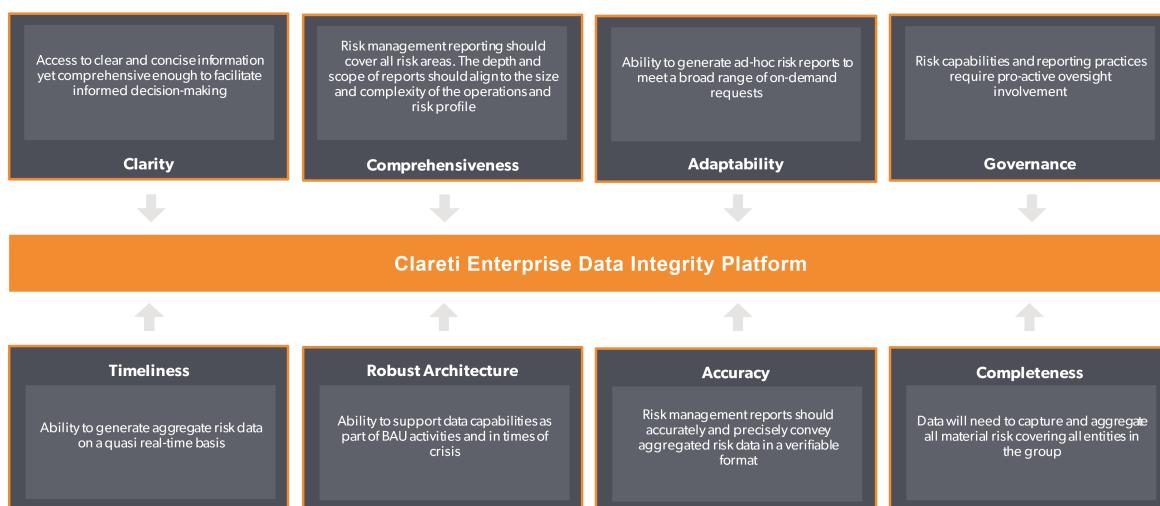
Gresham's Clareti platform allows FIs to understand and control their data. It is designed to eliminate risk and provide insight into the business that provides accountability and agility (see Figure 2).

Clareti's matching algorithm isn't constrained by a fixed data model. It can take multiple feeds and match them, enabling FIs to process complex information, while allowing for future expansion. Integrity is built-in, with automated comparison, verification and validation, which ensures regulatory compliance and protects FIs against financial loss. Users also have real-time visibility of transactional data at any moment, prioritizing transparency, while reports can be accessed automatically.

Even in extremely high-volume, low-latency environments with complex unstructured data flows, Clareti allows organizations to conduct millions of transactions per hour in fast-moving markets.

Gresham provides the latest generation of reconciliation systems. These can be used in the broader marketplace for risk data management, ensuring completeness, integrity, accuracy and timeliness. Giving operations and management functions the tools to control their data has a strong positive commercial impact.

Figure 2: How Clareti approaches data integrity and control

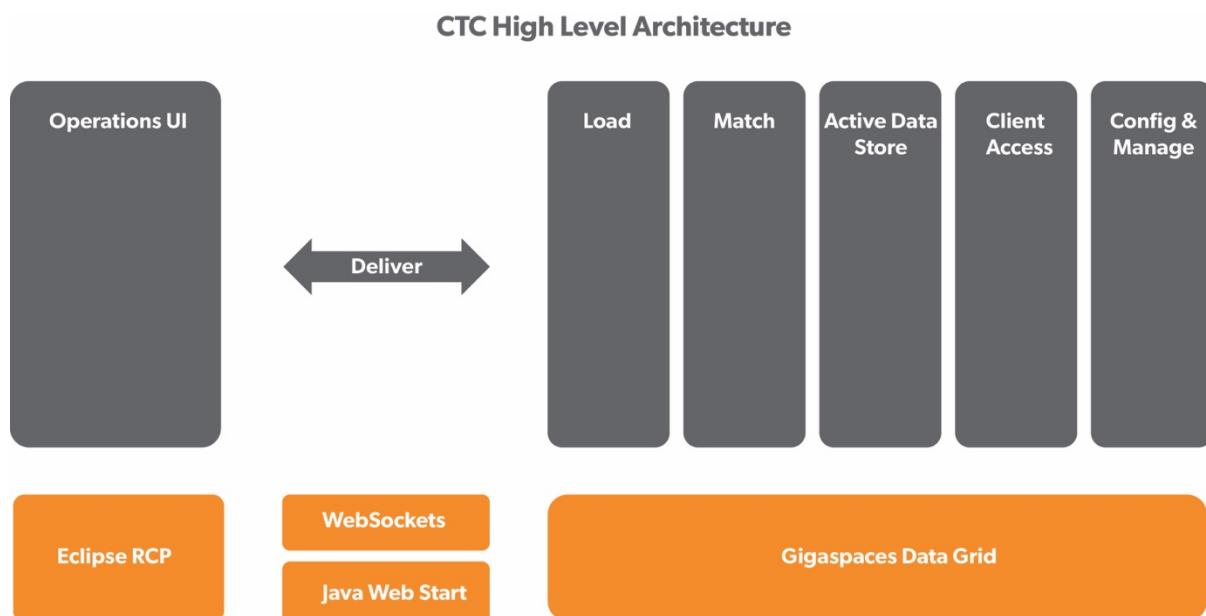


Source: Gresham

Clareti Platform

At the core of Gresham's Clareti platform, which – according to the company – provides real-time data integrity management based on business-driven controls. This is a discontinuous development of high-performance matching and reconciliation technology, and has been applied to a wide range of problems in many different finance and banking sectors, including risk management, regulatory reporting, finance, client reporting and risk data management compliance.

Figure 3: CTC High-level architecture



Source: Gresham

Gresham's Clareti platform is 'data model free' and self-learning, and can handle structured data and unstructured data. CTC analyzes the source data structure using sample data, and builds a data model so that the source data can load directly in its native format. This removes the data mapping exercise, the potential for schema 'shoehorning', and Extraction, Transformation, Loading (ETL) processing. The platform supports all types of source data, including delimited, fixed position, Swift and XML.

Clareti-as-a-Service (CaaS) clients are hosted in regional data centres in their relevant geography, removing the risk of cross-border data movement in sensitively regulated areas. CaaS consists of a server application – which manages all configuration and data, and which does the main data processing – and a user-interface application, which is delivered to users to allow them to perform manual operations on the data (see Figure 3). This is run as a hybrid cloud architecture: all data processing is handled via the cloud, while end-user activities are performed via a desktop application.

The platform can support data and record structures regardless of how wide the dataset is, which allows the system to cover a wide range of asset classes (including rates, credit, commodities, Foreign Exchange [FX], equity or any structured or hybrid OTC derivative product). Clareti has no restriction on the number of different fields, nor does it have a limit on the number of each type of field that can be loaded. Gresham uses in-memory data grid technology to achieve scalability (Intel has benchmarked CTC to process 500,000 equity trades per second).

In the current real-time, intraday, event-driven world, ensuring data quality is crucial. The commercial impact of inaccurate and missing data is greater than ever, and the costs of manual remediation are still high. The platform covers the entire lifecycle and ensures that the trade repository's view, the central clearer's view and the organization's internal systems are all synchronized – otherwise discrepancies are raised in real time. Margin calls, cash and collateral movements are managed with full operational integrity, with alerting and exception management if third parties fail to deliver sufficient cash or collateral.

Clareti provides an Onboarding Accelerator to help business users rapidly configure a new reconciliation. This wizard-based tool uses a heuristics engine to analyze sample data and suggest matching rules automatically. It also provides a complete self-documenting definition of all aspects of the reconciliation. This saves time and money, and further reinforces integrity and synchronizing control.

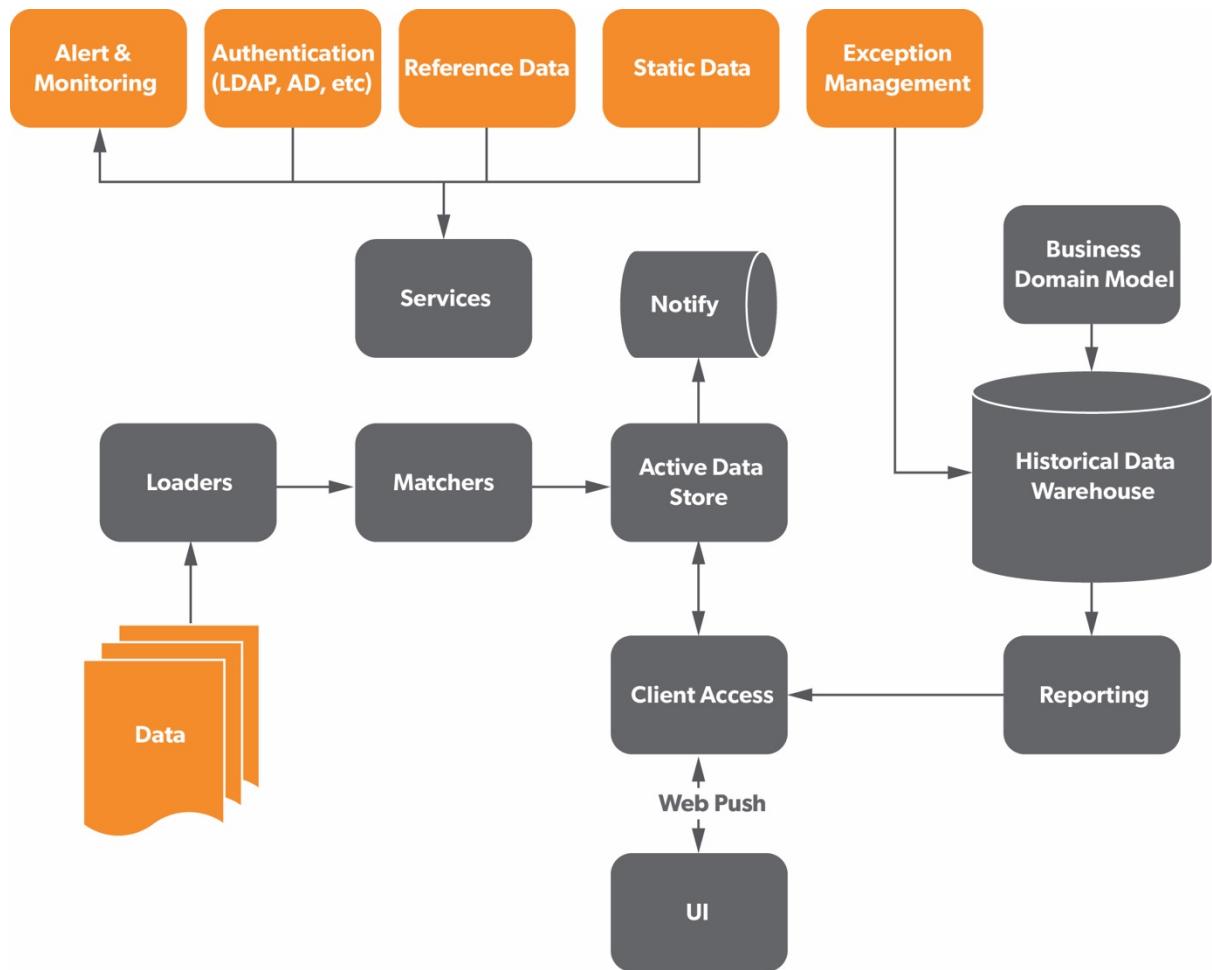
Clareti uses adaptive rule-making software. The match analysis is an iterative process. The heuristics engine will re-analyze sample data not already matched by previous rules and suggest new rules based on the current data set. The Accelerator, while performing the data correlation analysis, will also review the correlation using the external mapping tables it has access to.

Clients are able to build new reconciliations and take them live into the production system in as few as one to three days. Users can adapt the Clareti data model to changes in data feeds over time, using simple configuration, rather than having to wait for an external ETL process to be modified.

Active Data Store

The Active Data Store (ADS) component manages all active data, which is generally the data available for matching and other business logic. The ADS can be scaled out by deploying multiple instances, sharing the load, and applying a partitioning strategy to locate data across the instances. To deal with potentially large volumes of data efficiently the data is represented as Plain Old Java Objects (POJOs), with compression and pooling available for repetitive character data. The ADS is also responsible for coordinating the writing of data to any defined or historical data warehouse. Figure 4 illustrates the CTC reconciliation framework.

Figure 4: CTC architecture



Source: Gresham

Loading and matching

Data will be automatically loaded into the reconciliation process when it becomes available. This will trigger the enrichment and matching logic configured for the reconciliation to be applied by the CTC rules engine, resulting in the creation of auto-matches, suggested matches and exceptions. A dynamic blotter area provides an active workspace where users can compile trial matches.

CTC can take multiple feeds and match using automated one-to-one, one-to-many or many-to-many rules. These can be applied to any number of feeds and/or logical reconciliation sides, so transactions can be rapidly reconciled, verified and validated. Mathematical tolerance functions can be defined, enabling users to incorporate more than just simple base currency and percentage-based tolerances. Rules can include intelligent reference masking/pattern extraction to improve match rates. Enrichment and aliasing can be applied on any number of fields.

User interface

CTC uses a Java-based client application with automated web-based deployment. The user interface can take advantage of the local client-side resources, allowing larger data sets to be manipulated, searched, filtered, sorted and so on, with response times of less than a second.

Workflows can be created to seek authorization for actions, allocate tasks or escalate problems. All data and configuration is marked by its owning tenant and by the owning reconciliation. The ability to add Notes allows users to create validated transactional data for internal risk management or external regulatory reporting.

Regulatory reporting

For specific regulatory reporting requirements, CTC Transaction Reporting verifies and validates multiple sources of internal data – delivering the correct information, in the correct format, to the relevant transaction reporting utility (such as for the European Market Infrastructure Regulation (EMIR), the Markets in Financial Instruments Directive/Regulation (MiFID/MiFIR), or the Regulation on Wholesale Energy Market Integrity and Transparency (REMIT)). Multiple regulatory logic and rules are pre-built into the platform, automatically determining to which body a trade needs to be reported.

Clareti operates an open database policy. It publishes a complete data dictionary to allow clients to become self-sufficient in configuring reports to meet their business requirements. An open-source, eclipse-based report designer Graphical User Interface (GUI) tool is available for building and testing new reports.

When the report is rendered inside the Clareti user interface, it can be configured to allow embedded hyperlinks to invoke other reports and pass context-sensitive parameters. This allows drill-down into higher levels of detail or specific granularity.

Auditing

Clareti is automatically self-documenting, which is important for BCBS 239 data governance and compliance. It maintains a full audit log of all operations and data updates. Users can drill into the history view to display full audit details about the record. This includes when it was loaded, any match groups and/or exceptions it is a constituent of, plus the audit timeline and executing user of any operations, modifications and so on that have been applied to the record.

All user activity is also audited. This includes details of when the user logged on and off the system, plus all activity performed during the session.

Context

This section summarizes the demand- and supply-side factors that are shaping the market for data integrity and control solutions. It considers the market environment and dynamics that are driving FIs' requirements for data integrity and control solutions, and categorizes vendors of these solutions. For more detail on all of these aspects, see Chartis's report *Data Integrity and Control in Financial Services 2016*.

3. Demand-side analysis

Market dynamics

There are three main external influences defining FIs' need for solutions to ensure the integrity and control of their data.

Reduced profit margins

In a marketplace of squeezed margins, preserving profits is essential. To enhance the accuracy and integrity of their data, companies are moving toward more overarching strategic solutions. The operational costs of manually scrutinizing data are high, and the regulatory demands of new rules such as the Comprehensive Capital Analysis and Review (CCAR) and Dodd-Frank Act Stress Tests (DFAST) will require more manual processes early in the data management process. By employing data integrity and control solutions, FIs can move beyond manual processes and reduce their costs long-term, with a significant impact on their profit margins.

The explosive growth in data

The volume of data that FIs have to deal with is huge, and growing exponentially, largely because of increasingly complex business processes and more stringent reporting regulations. Data integrity and control solutions will play a critical role in developing the processes needed to define, categorize and manage this data.

Increased demands from regulators

In the financial services industry, three relatively recent pieces of regulation – the Basel Committee's regulation BCBS 239¹, the US Federal Reserve's *Supervisory Guidance on Model Risk Management* (SR 11-7)² and the European Union's (EU's) Solvency II legislation³ – have focused attention on data integrity and control. Each of these mandates covers data quality in some detail, and their requirements are helping to shape the market for data integrity and control solutions. In terms of the industries that the regulations cover, the most focused of the three is Solvency II which applies to the insurance industry, while BCBS 239 has the broadest reach within the financial sector.

¹ <http://www.bis.org/publ/bcbs239.pdf>.

² <http://www.occ.treas.gov/news-issuances/bulletins/2011/bulletin-2011-12a.pdf>.

³ http://ec.europa.eu/finance/insurance/solvency2/index_en.htm.

Enterprise dynamics

This section summarizes the main dynamics within FIs themselves that are helping to shape demand for specific functions in data integrity and control solutions, and how these solutions can deliver value now and in future.

Chartis's **data integrity value chain** divides the typical enterprise data flow into six integrity steps, from the original acquisition of data through to its final distribution. We believe these processes work together to maintain data integrity and control, and by presenting this as an end-to-end process, we can visualize all the elements needed to implement data integrity and control within a business. However, vendors take a far from linear approach to these processes (for more information see the Chartis report *Data Integrity and Control in Financial Services 2016*).

Value within and across processes

To get the most from their limited time and resources, FIs must balance improvements *within* individual end-to-end processes with initiatives to improve integration *across* processes. FIs will also have to strike a balance between rapidly deployed, supplemental solutions that improve data control within their existing infrastructure, and longer-term replacement applications that come with embedded capabilities to improve data quality management. The data integrity value chain is one useful way that FIs can understand their overall environment and plan a way to optimize their investments.

4. Supply-side analysis

Vendor categories

Chartis has divided the supply-side vendors of data integrity and control solutions into seven categories, according to the particular tools they offer. Within all these market segments we will assess the capabilities of tools to analyze both structured and unstructured data.

1. **Data reconciliation and control.** These tools have a strong matching capability, matching different data sets and generating error and variance reports of variable complexity.
2. **Data modeling tools.** Tools which manage, organize, transform and control data and metadata models.
3. **Master data management.** Tools which manage and control data from customers, counterparties, legal entities and securities, and which provide a framework to control transactional metadata.
4. **Data presentation and reporting.** In essence, these tools provide a structure in which FIs can create, develop and submit pre-specified regulatory or management reports. They may have a variety of intermediate integrity checks for transformation and control, along with data process and workflow management capabilities. But their main structural features integrate these functions to ensure that specific management or delivery reports or data are delivered.
5. **Data quality tools.** Systems that provide data models, taxonomies, business rules and data management frameworks and tools. These measure, validate and improve data quality from a statistical or semantic perspective.
6. **Extraction, Transformation, Loading (ETL).** Vendors initially developed these general-purpose data lifecycle management tools to move what was primarily relational data from systems A to B with a variety of well-determined validation and transformation rules. However, they have expanded in scope, and now have far more general capabilities for metadata management, data reconciliation and a variety of other capabilities across the data integrity value chain. Data is subject to evolutions and transformations through different systems, and these tools are pivotal in controlling its quality.
7. **End-user monitoring, activity and control.** Cloud computing has created opportunities for this category to match the exponential growth in Domain Specific Languages (such as HTML, Java, Matlab etc) that has happened within FIs. This has given relatively inexperienced programmers considerable power to provide end-user activities that were not previously feasible. End-user activities include:
 - Creating metadata.
 - Changing the parameters of data filters.
 - Setting up and changing the parameters of data reconciliation.

Some vendors support the full lifecycle of data across the data integrity and control value chain, from checking and controlling the integrity of trade and transactional data (such as reconciliations), all the way through the lifecycle and progress of data elements within the organization. This includes data quality (both rule-based and statistical), semantic control/mapping and management of intermediate data, the lineage of this intermediate data, and sophisticated storage and management; through to providing tools for effective data distribution and access control. Other vendors, meanwhile, focus on a specific aspect of the data integrity and control cycle, such as reconciliation at the trade and transaction level, while still others focus on lineage and governance. Some vendors focus on reconciliation,

governance and management of complex data types, whereas others focus on relatively simple but high-volume transactions.

5. Appendix A: FinTech Quadrant™ methodology

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's FinTech Quadrant™ 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.

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

Where possible, FinTech vendors are given the opportunity to correct factual errors prior to publication, but cannot influence Chartis's opinion. FinTech vendors cannot purchase or influence positive exposure.

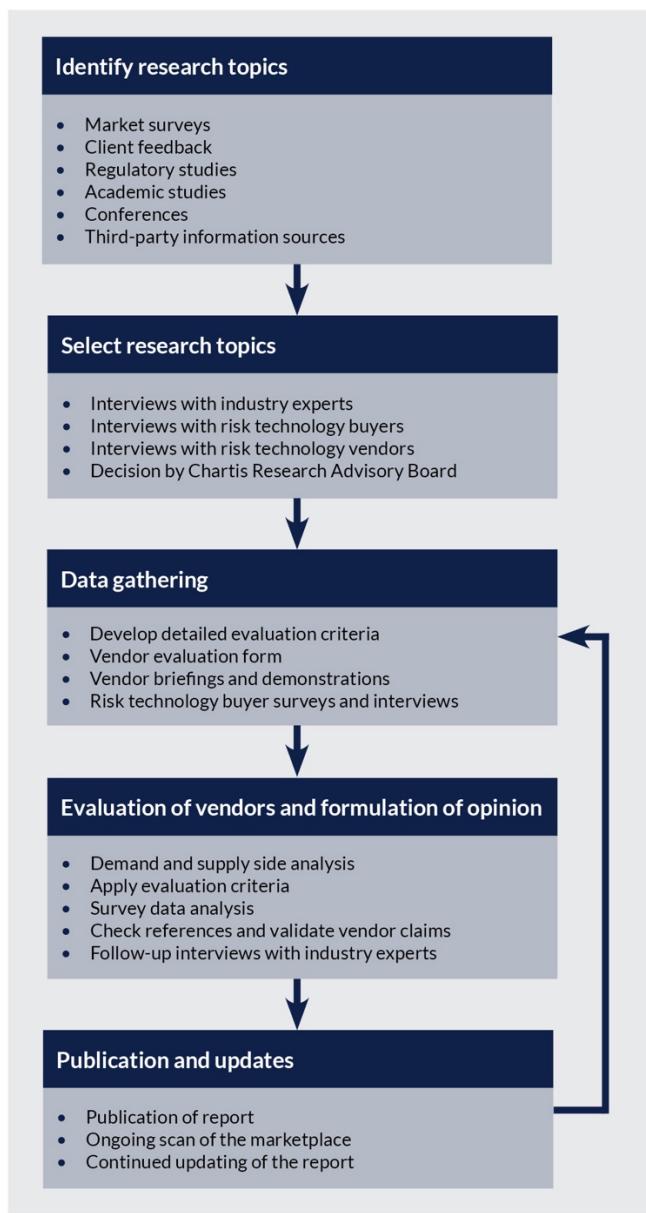
Inclusion in the FinTech Quadrant™

Chartis seeks to include FinTech 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 FinTech 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 FinTech buyers and users, and from publicly available sources.

Research process

The findings and analyses in the FinTech 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 5, below, describes the research process.

Figure 5: FinTech 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 FinTech projects, implementations, and requirements analysis.
- **FinTech user surveys** As part of its ongoing research cycle, Chartis systematically surveys FinTech users and buyers, eliciting feedback on various 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 FinTech 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.

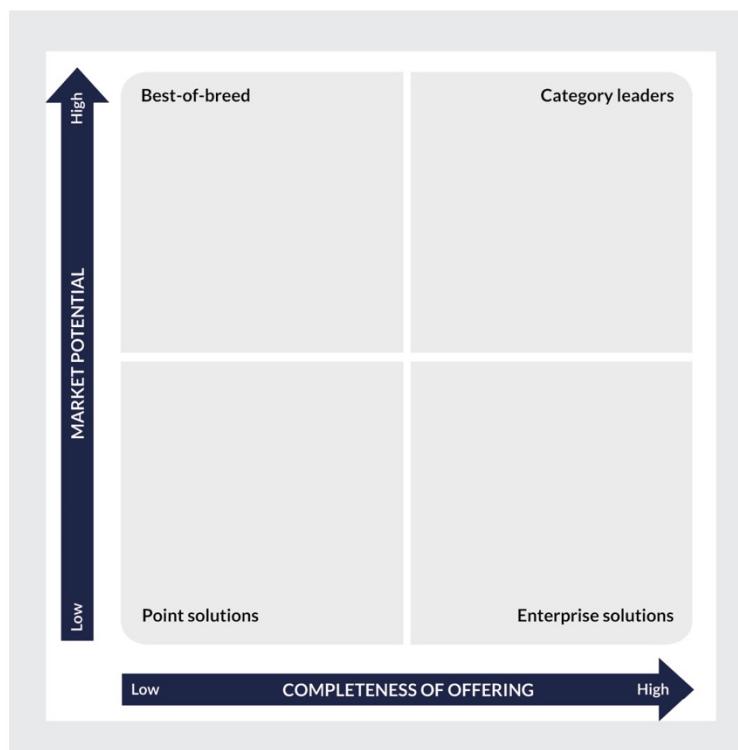
Evaluation criteria

The FinTech Quadrant™ evaluates vendors on two key dimensions:

1. Completeness of offering

2. Market potential

Figure 6: FinTech 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 financial 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 financial technologies, 'big data' and business performance is given a positive score.

- **Breadth of functionality** The spectrum of requirements covered as part of a financial technology solution. This will vary for each subject area, but special attention will be given to functionality covering analysis, data management, multiple business lines, multiple asset classes, front office to back office, and multiple user types (e.g. business manager, CSO, CRO, CFO, COO). 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 FinTech solutions 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 (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.
- **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 'advanced' analytics and standard 'business' analytics. Advanced analysis requires such capabilities as non-linear calculations, predictive modeling, simulations, artificial intelligence, 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 FinTech solutions. 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' 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 financial technology market by solving specific business 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 solution 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 solution. Best-of-breed solutions are often considered as a subset of more comprehensive financial 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 business problem.

Enterprise solutions Enterprise solution providers have a clear strategy and vision for providing financial technology platforms. They are characterized by the depth and breadth of their technology capabilities, combining functionally rich FinTech 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 analytics workflow 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 content and data with their software applications to provide an integrated 'one-stop-shop' for FinTech buyers.

Category leaders Category leaders are FinTech 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 FinTech topics with deep technology assets and capabilities. They can demonstrate this by addressing the needs of very large clients with complex data and technology requirements, as well as addressing the needs of smaller clients with standardized requirements looking for integrated solutions from a single vendor.

6. How to use research and services from Chartis

In addition to our flagship industry reports, Chartis offers customized information and consulting services. Our in-depth knowledge of the financial technology market and best-practise 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.

For FinTech buyers

If you are purchasing a FinTech solution, Chartis's vendor selection service is designed to help you find the most appropriate solution for your needs.

We monitor the market to identify the strengths and weaknesses of the different FinTech solutions, and track the post-sales performance of companies selling and implementing these systems. Our market intelligence includes key decision criteria such as total cost of ownership) comparisons and customer satisfaction ratings.

Our research and advisory services cover a range of FinTech topics such as trading systems, collateral management, risk management, data aggregation, analytics and business intelligence.

Our vendor selection services include:

- Buy vs. build decision support
- Business and functional requirements gathering
- Identification of suitable implementation partners
- Review of vendor proposals
- Assessment of vendor presentations and demonstrations
- Definition and execution of Proof-of-Concept (PoC) projects
- Due diligence activities

For FinTech vendors

Strategy

Chartis can provide specific strategy advice for FinTech vendors and innovators, with a special focus on growth strategy, product direction, go-to-market plans, and more. Some of our specific offerings include:

- Market analysis, including market segmentation, market demands, buyer needs, and competitive forces
- Strategy sessions focused on aligning product and company direction based upon analyst data, research, and market intelligence
- Advice on go-to-market positioning, messaging, and lead generation
- Advice on pricing strategy, alliance strategy, and licensing/pricing models

Thought leadership

FinTech vendors can also engage Chartis to provide thought leadership on industry trends in the form of in-person speeches and webinars, as well as custom research and thought-leadership reports. Target audiences and objectives range from internal teams to customer and user conferences. Some recent examples include:

- Participation on a 'Panel of Experts' at a global user conference for a leading Global FinTech vendor
- Custom research and thought-leadership paper on the latest financial services regulations and implications for technology solutions
- Webinar on new FinTech solutions for customer onboarding and due diligence
- Internal education of sales team on key regulatory and business trends and engaging C-level decision makers

7. Further reading

- Data Integrity and Control Solutions in Financial Services 2016
- Risk Data Aggregation and Reporting Solutions 2016
- Risk Data Aggregation and Reporting Solutions 2016 – Gresham Vendor Highlights
- RiskTech100® 2016

For all these reports see <http://www.chartis-research.com>.