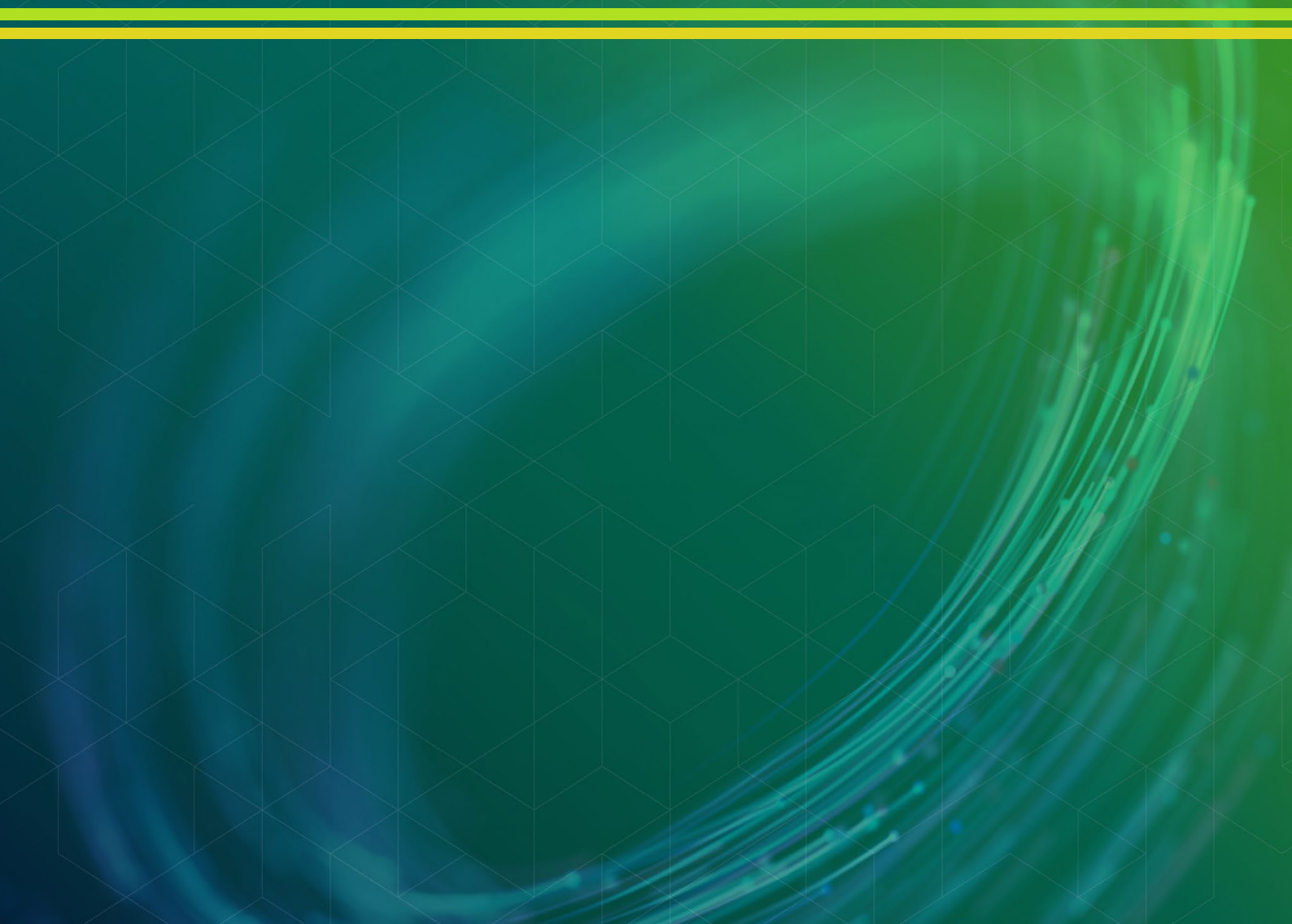




**Chartis  
Storm  
2024**



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# 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 WatersTechnology. Chartis' 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 management 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.
- Wealth advisory.
- Asset management.

Chartis focuses on risk and compliance technology, giving 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 developing and implementing risk management systems and programs for Fortune 500 companies and leading consulting firms.

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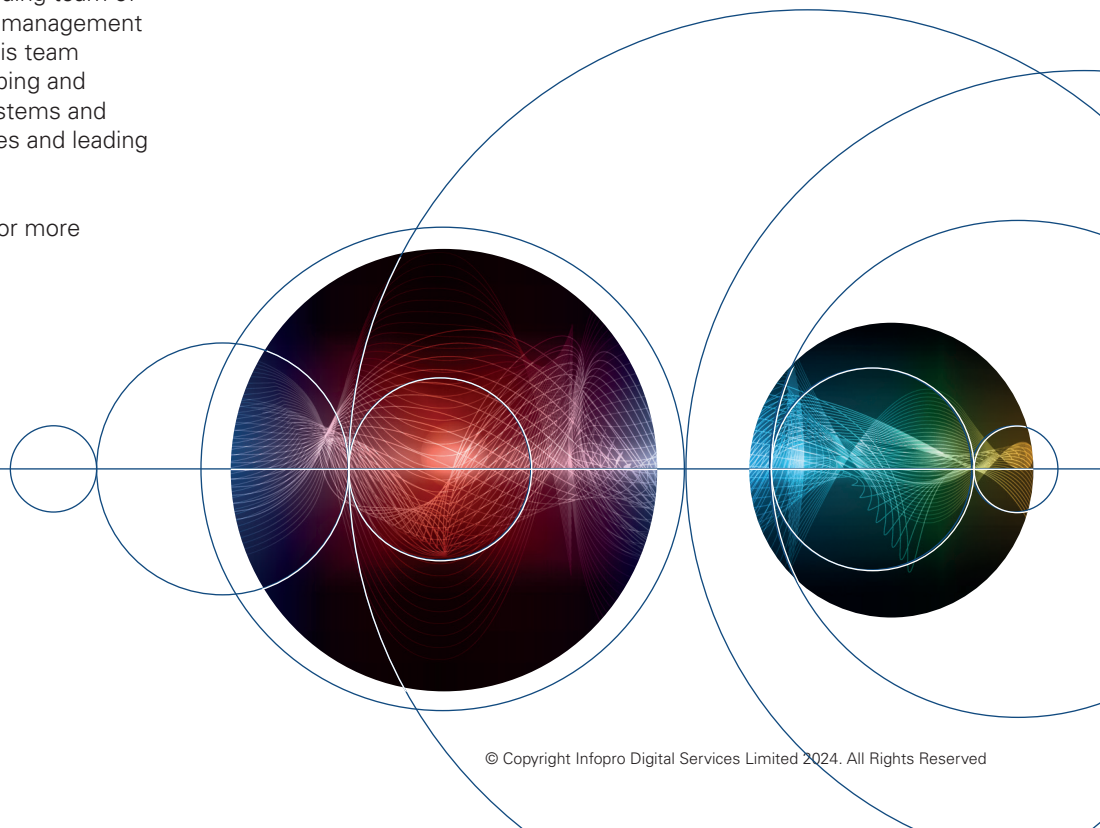
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## Table of contents

1. Foreword	4
2. Introduction: guide to the rankings and awards	5
3. Overview: technology and sector trends	7
4. STORM 2024: the rankings and awards	10
5. Further reading	21

## 1. Foreword



Welcome to the third iteration of the STORM<sup>1</sup> ranking and analysis. This report provides our rankings and awards for 2024, as well as a brief overview of the market context in which we conducted our research. We will publish a more detailed report, which analyzes the main market and sector trends and dynamics in more depth, later in the year.

There are two important changes to this year's rankings. First, to reflect the diversity and vibrancy of the analytics space, we have increased the number of vendors and providers featured in each ranking to 50. Second, we have added a fourth ranking: BuySideRisk50. This has allowed us to address some of the significant shifts that are occurring on the buy-side of the financial industry, as firms embrace an ever-widening array of analytics and asset-specific statistical tools.

The main development we are seeing in quantitative and statistical tools is the availability of more – and more flexible – compute power. This is having several impacts at a structural level, forcing developers and model practitioners to reassess their approaches to these tools. And because of the ubiquity of machine learning in many areas of finance – notably retail finance – the impact of GenAI is being felt at a deep level in many different sectors.

In this market and technological context, a wealth of new technology vendors and providers has emerged in recent years, making this an especially pertinent and exciting time to be analyzing these markets. As always, Chartis' goal is to make sense of these changing and dynamic landscapes, and to recognize the companies doing great things within them.

With that in mind, enjoy the report, and join me in congratulating the featured vendors and category winners.

**Sid Dash, Research Director**

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<sup>1</sup> STORM stands for 'STatistical analysis, Optimization and Risk Management'.

## 2. Introduction: guide to the rankings and awards

Our 2024 research contains **four separate rankings**, each of which now features 50 vendors. In addition to **QuantTech50**, **RetailFinanceAnalytics50** and **Insurance Analytics50**, we have added **BuySideRisk50**, to reflect important changes we are seeing in buy-side analytics and infrastructure.

Despite overlaps between these areas, we believe that their considerable differences in analytical approaches warrant separate and distinct analyses. Our STORM research therefore considers the four verticals as distinct, but intersecting, segments.

### STORM research and rankings: coverage and criteria

At the core of Chartis' STORM research are the statistical and analytical models driving modern finance and insurance. The scoring criteria reflect that focus and greater weight is given to providers of original core models. The diversity, scale and complexity of the analytical and quantitative models we cover require standardized frameworks and consistent categorization so we can analyze their different elements (see Figure 1 on page 6).

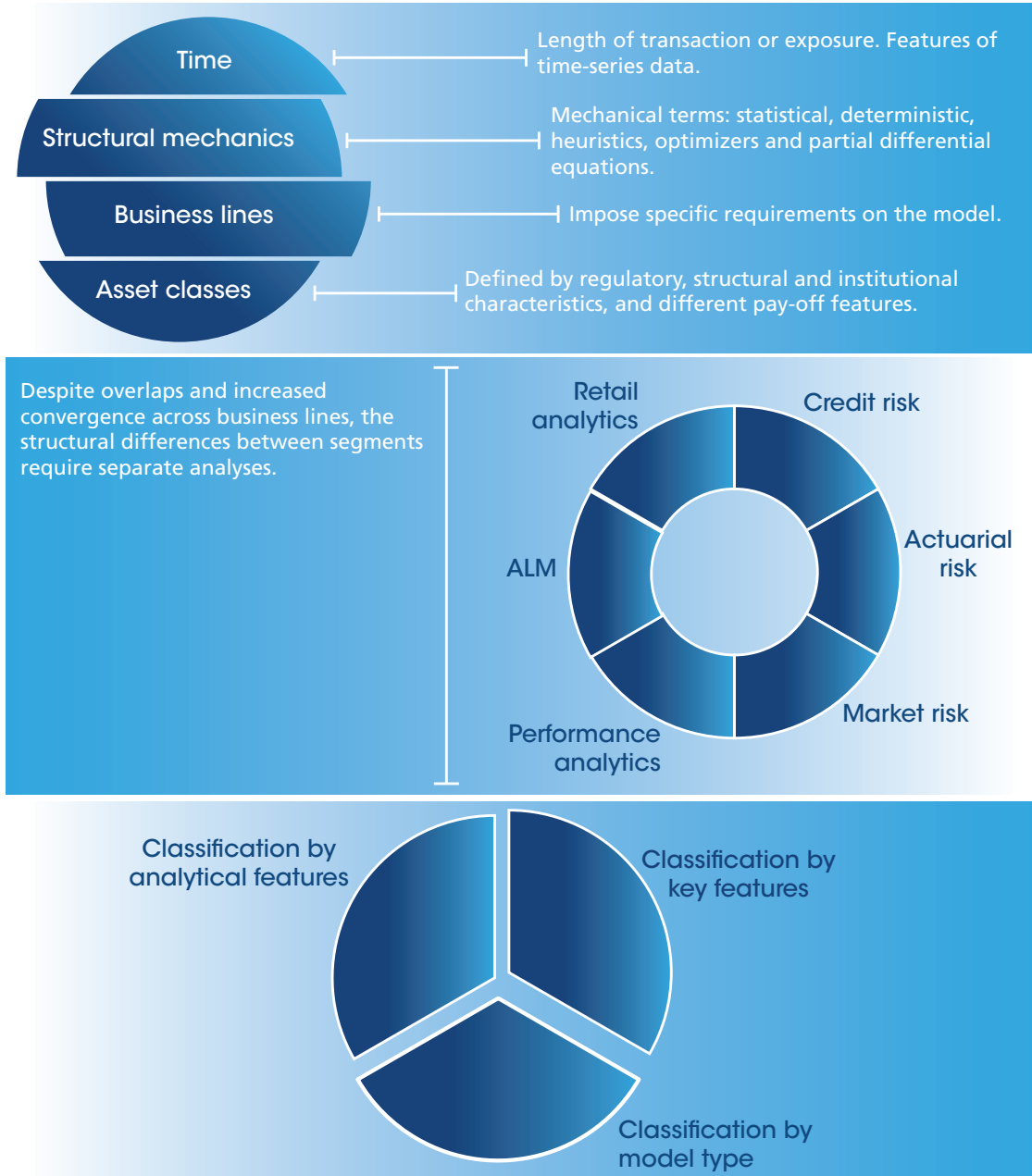
While we recognize that analytics vary from business line to business line, the key criterion for us is how the nature of the models used aligns with their computational architecture.

#### Scoring criteria for the rankings

In compiling our rankings, we employed a structural framework for analysis, capturing the capabilities and impact of vendors within the STORM landscape. The main scoring criteria across the rankings are:

- **Breadth and coverage.** The breadth and coverage of a vendor's analytics environment.
- **Impact.** How widespread a vendor's innovations, technologies and techniques have become in the industry. This may relate to a particular model or approach, such as providing rapid model validation techniques for a specific class of model, or making extensive use of a class of model (such as a Merton model for calculating credit risk from equity prices). The impact measure varies in each ranking category. In the BuySideRisk50, for example, the measure combines a vendor's adoption of risk and analytics frameworks with the ability of clients to easily access specific vendor models, tools and data services. This takes into account the particular microstructure of buy-side firms.
- **Computational infrastructure.** Hardware and software alignment.
- **Strategy.** How effectively a vendor is leveraging these technologies and delivering them to the market.
- **Innovation.** How innovative a vendor is in terms of its modeling approach, analytical methodology, statistical techniques, optimization and risk models.

**Figure 1: Model categories and classifications**



Source: Chartis Research

## 3. Overview: technology and sector trends

This section provides a brief overview of the market context and trends we identified in our STORM 2024 research. A more detailed report, with Chartis' view of the burgeoning market for analytics and statistical tools, will publish later in 2024.

### Technology trends

#### More power, and the challenge to tradition

For many years, firms in the financial industry have had access to computational power but have under-used it. This is changing, however, as more computational capacity and more sophisticated tools become available. Ultimately, this shift will challenge traditional models of computation. Traditional cloud and data center architectures, for example, are not optimized for statistical machine learning (ML) and artificial intelligence (AI) models, which have steadily become the workhorses of the ongoing statistical evolution.

Indeed, AI – and specifically generative AI (GenAI) – has unleashed investment in a whole new range of large-scale, computationally focused grids. These are enabling firms to make more appropriate use of conventional statistical AI and other forms of mathematical computing that previously had been under-utilized.

#### Cloud architectures – a structural change

Alongside the shift in computational power and complexity, one structural change to the existing cloud ecosystem – and cloud hyperscalers in particular – could present a new challenge for developers in the next few years. Rather than being designed for large-scale ML, traditional cloud architectures were built to support general-purpose applications and to offer an appropriate balance of performance and cost. These products were mostly designed for such workloads as web servers, e-commerce sites and relatively simple databases.

Now, however, high-performance computing (HPC) stacks are becoming available to third-party and commercial developers, largely because European tech firms are looking to compete with large-scale American hyperscalers and AI startups.

While this shift in focus is largely due to market dynamics around AI and GenAI, the longer-term consequences are likely to be broader and probably more dramatic, not least because to date grids in the cloud have not been HPC-oriented. Crucially, more easily available infrastructures bring with them a different programming paradigm, one that requires developers to be more aware of the hardware resources they have in their computational ecosystem.

### Sector trends

#### QuanTech

Against this background, the single biggest overarching theme in the QuanTech space is the increasing availability and variety of compute clusters, including HPC clusters. This change in compute is having a variety of impacts on the various QuanTech segments and creating complex challenges for some firms around how to program for them.

The most obvious impacts are in the areas of pricing and, more significantly, pricing and individual instrument modeling. Areas such as residential mortgage-backed securities (RMBSs) are also being affected, as it is now possible to conduct many more simulations relatively cheaply.

The greatest impact has been on xVA analytics, which have become cheaper and simpler, followed by securitization and related analytics, over-the-counter (OTC) derivatives pricing and equities, and market risk systems. The areas of least impact, by contrast, are those with the smallest computational overhead – such as calculating probabilities of default (PDs) and loss-given defaults (LGDs) – for which, in terms of computation, the methodological challenge often outweighs everything else.

### **Retail finance analytics**

Chartis has identified three major structural themes in the retail finance sector. One is the growing ubiquity of ML models, which (unlike the situation in wholesale finance) are now universal in retail. ML models in retail finance are standardized, tend to focus on parameters and inputs, and include optimization for pricing and the aggregating, segmenting and profiling of behavioral data.

Indeed, despite some interesting challenges and growing disparities across different markets and use cases, the use of ML has moved beyond retail banking. It is now aggressively and widely used in financial planning models for retail customers, for risk profiling in financial planning, and in securities.

The second theme is the increasing convergence between credit (and other risks in areas such as anti-money laundering) and fraud in the retail space, as more banks realize that the models used in both areas are similar and use similar datasets. The third theme in retail finance is an increasingly 'entity-centric' view of retail data. Databases, for example, are increasingly entity-centric, whether they have actually been formatted to be entity or graph databases, or if they still continue to employ relational and other Hadoop-style frameworks.

### **Insurance analytics**

Insurance risk analytics continue an overarching trend toward convergence with risk frameworks from the banking and capital markets sectors, while increasingly incorporating climate risk into the analytical ecosystem. Equally, and particularly in insurance underwriting, we see a very strong integration of data science and novel statistical techniques such as ML, natural language processing (NLP) and potentially GenAI.

In some ways, a convergence is occurring of three distinct analytical modes: conventional actuarial modeling styles, data science and Big Data, and modeling frameworks from banking and capital markets. This is adding significant structural complexity to insurance analytics developmental strategies and frameworks. There has also been massive growth in data types, creating a bedrock of standardized commercial data.

Fortunately, technology has evolved rapidly to address these factors, and a broad range of new visualization tools, powerful statistical infrastructures and domain-specific languages has become increasingly available. Insurance firms that can acquire or build these technologies and assemble the various components will be at a distinct advantage.

### **Buy-side risk**

'Buy-side' is a broad and catch-all term; in our research we consider the diverse sectors that are normally encapsulated in such a definition (including hedge funds, asset management, insurance asset management, private equity, private credit, venture capital, family offices and pension funds). In addition, the legal structure of several commonly accepted categories may be non-standard across jurisdictions. We also take into account the expansion of hybrids such as exchange-traded funds, wealth management firms and robo-advisors, noting that far too often these diverse industries are grouped together as if they have the same software/risk and operational requirements.

They most emphatically do not. They face very different market microstructures, leverage different suppliers, and often use very different mixes of risk and analytics modeling tools. Our research will attempt to outline and highlight these details, as well as how the microstructure of each industry impacts the analytical environment that the firms in those sectors leverage and use (and should use). With this in mind, in our ongoing publications we will attempt to delineate the different evolutions of the risk and analytics environments in the various sectors categorized under the 'buy-side' term.

In buy-side risk, we evaluate traditional risk models, tools and frameworks in terms of how effectively and how widely they serve the buy-side sectors mentioned above. Tackling liquidity risk, for example, has become standard for many buy-side firms. In essence, buy-side risk focuses on two areas: tools for portfolio optimization, construction and management, and those for performance attribution.

Portfolio management systems have not changed significantly since their heyday in the 1980s, and in many ways these models are built into the fabric of asset management. Nevertheless, firms have spent a lot of time adapting their models to specific datasets and market portfolios.

The more critical evolution has been in the supply of data into these models. The real challenge in assessing the performance of these models is determining not how good or bad they are, but what data is going into them, as well as what data and indices are available. Similarly, the key challenge in performance attribution is data, and being able to follow detailed compliance requirements.

## 4. STORM 2024: the rankings and awards

### QuantTech50 2024: ranking

2024 rank	Company
1	Moody's
2	Numerix
3	Bloomberg
4	SAS
5	FIS
6	Murex
7	ICE
8	S&P Global
9	SS&C
10	Vichara
11	ORM
12	Prometeia
13	MatLogica
14	RiskSpan
15	Conning
16	LSEG
17	Nasdaq
18	FINMECHANICS
19	Oracle
20	MSCI
21	MathWorks
22	Global Valuation
23	ION Group
24	CRISIL
25	Compatibl

2024 rank	Company
26	Opensee
27	NAG
28	Andrew Davidson & Co.
29	Cboe
30	FactSet
31	Finastra
32	Vector Risk
33	Thetica Systems
34	Wolters Kluwer
35	Raise Partner
36	zeb.control
37	THC
38	Solytics Partners
39	Beacon Platform
40	Everix
41	Riskfuel
42	Qontigo
43	IDS GmbH (Allianz)
44	Detech
45	Algorithmica (FCG)
46	Evalueserve
47	Simudyne
48	CloudAttribution
49	Vola Dynamics
50	OpenGamma

## QuantTech50 2024: category winners

Category award	2024 winner
Overall winner	Moody's
<b>General award categories</b>	
Breadth and coverage	Moody's
Computational infrastructure	Oracle
Impact	Moody's
Innovation	Global Valuation
Strategy	Moody's
<b>Computational awards</b>	
Adjoint algorithmic differentiation (AAD)	MatLogica
Core math library	NAG
Data-parallel programming	Global Valuation
Domain-specific languages	Numerix
Domain-specific languages (derivatives)	Numerix
High-performance computing (HPC) on the cloud	CoreWeave
Quant management framework	Beacon Platform
Quantitative development environment	MathWorks
Simulation frameworks	MathWorks
Times-series analysis frameworks	Algorithmica (FCG)
<b>Innovation awards</b>	
Innovation in collateral and margin analytics	OpenGamma
Innovation in computational frameworks	Global Valuation
Innovation in computational languages	NVIDIA
Innovation in credit modeling	Moody's
Innovation in GPU applications	Global Valuation
Innovation in market risk	FINMECHANICS
Innovation in mathematical environments	MathWorks

Category award	2024 winner
Innovation in simulation frameworks	Simudyne
Innovation in traded credit	Vichara
Innovation in xVA analytics	Numerix
<b>Solution category awards</b>	
Alt. credit	Moody's
Analytics for real estate	Moody's
Asset and liability management analytics	QRM
Balance sheet analytics	QRM
Behavioral modeling	SAS
Climate risk analytics	Moody's
Collateral analytics	FIS
Collateralized loan obligations (CLOs)	Moody's
Credit portfolio management	Moody's
Credit risk analytics for wholesale credit	Moody's
CVA	Numerix
Economic scenario generation	Conning
Equity derivatives	Numerix
Exchange-traded derivatives	Cboe
Fixed income (municipal bonds)	Bloomberg
Loans	S&P Global
Model validation tools and accelerators	CRISIL
Mortgage analytics	QRM
MVA	Numerix
Natural catastrophe modeling	Moody's
Over-the-counter (OTC) derivatives	Numerix
P&L analytics	Murex
Portfolio optimization	Bloomberg

Category award	2024 winner
Prepayment modeling	Andrew Davidson & Co.
Risk management for private credit	Oxane Partners
Valuation support for private credit	Oxane Partners
xVA	Numerix
<b>Pricing/valuation/asset class-specific analytics awards</b>	
CMBS pricing	Vichara
Fixed income (convertibles)	FIS
Fixed income (corporate bonds)	Bloomberg
FX pricing	ICE
OTC derivatives pricing	Numerix
RMBS pricing	Vichara
<b>Application of AI in finance awards</b>	
AI innovation in capital markets	Riskfuel
AI innovation in insurance	SAS
AI innovation in retail banking	SAS
AI innovation in wholesale banking	Moody's
<b>Evaluated pricing and data awards</b>	
Evaluated pricing and data (credit)	Moody's
Evaluated pricing and data (fixed income)	Bloomberg
Evaluated pricing and data (multi-asset)	ICE
Evaluated pricing and data (OTC derivatives)	LSEG
<b>Rising Stars</b>	
	Ai SPARK
	Cognext
	MoCaX Intelligence
	ValidMind

## RetailFinanceAnalytics50 2024: ranking

2024 rank	Company	2024 rank	Company
1	SAS	26	Solytics Partners
2	LexisNexis Risk Solutions	27	Abrigo
3	FICO	28	Jocata
4	Earnix	29	IDS GmbH (Allianz)
5	Moody's	30	FinaMetrica
6	Oracle	31	ACI
7	Provenir	32	NetGuardians
8	Prometeia	33	Detech
9	Feedzai	34	Decision Inc.
10	Featurespace	35	ACTICO
11	FIS	36	Pelican AI
12	Nasdaq Verafin	37	InvestCloud
13	Nomis Solutions	38	CRISIL
14	Equifax	39	Sparkling Logic
15	Experian	40	Iress
16	Morningstar	41	Manipal
17	Infosys	42	Objectway
18	Intellect Design	43	Voyant
19	MathWorks	44	Schwab Advisor Services
20	IBM	45	TradingFront
21	Envestnet	46	Blaze Portfolio
22	Kiya.ai	47	DataPoints
23	CustomerXPs	48	Dimensional
24	Azentio	49	StratiFi
25	Nitrogen	50	Capital Preferences

## RetailFinanceAnalytics50 2024: category winners

Category award	2024 winner
Overall winner	SAS
<b>General award categories</b>	
Breadth and coverage	SAS
Computational/technological infrastructure	SAS
Impact	FICO
Innovation	LexisNexis Risk Solutions
Strategy	SAS
<b>Solution category awards</b>	
Alt. credit	LexisNexis Risk Solutions
Alternative financial frameworks coverage	Provenir
Application of AI in retail banking	SAS
Application of AI in retail markets	Morningstar
End-to-end retail risk platform	SAS
Fraud analytics	Feedzai
Identity analytics	LexisNexis Risk Solutions
Innovation in modeling theory	SAS
Planning and budgeting	Oracle
Price optimization	Earnix
Reporting and dashboarding	Oracle
Retail analytics development environment	SAS
Retail analytics governance framework	SAS
Retail credit analytics	SAS
Stress testing and scenario management	Moody's
<b>Rising Stars</b>	
	Andes Wealth Technologies
	TIFIN
	Tolerisk

## InsuranceAnalytics50 2024: ranking

2024 rank	Company	2024 rank	Company
1	Moody's	26	RNA Analytics
2	Aon	27	Nasdaq
3	Numerix	28	Opensee
4	FIS	29	Numerical Technologies
5	SAS	30	Zenith Actuarial
6	Conning	31	Riskthinking.AI
7	Earnix	32	MatLogica
8	QRM	33	Guy Carpenter
9	Oracle	34	Munich Re
10	LexisNexis Risk Solutions	35	PolySystems
11	SS&C	36	MathWorks
12	ICE InsureTech	37	Dynamo Analytics
13	WTW	38	Praedicat
14	Verisk	39	MavenBlue
15	Milliman	40	Stacc Escali
16	Finastra	41	Experian
17	Ortec Finance	42	Equifax
18	Detech	43	Resistant AI
19	SAL	44	CRIF
20	ShiftTechnology	45	Ambiental Risk Analytics
21	FRISS	46	zeb.control
22	Intellect Design	47	CARTO
23	Beacon Platform	48	CyberCube
24	Wolters Kluwer	49	Addactis
25	Swiss Re	50	Tautona

## InsuranceAnalytics50 2024: category winners

Category award	2024 winner
Overall winner	Moody's
<b>General award categories</b>	
Breadth and coverage	Moody's
Computational infrastructure	Moody's
Impact	Moody's
Innovation	Moody's
Strategy	Moody's
<b>Solution category awards</b>	
Actuarial modeling environment	Aon
Annuities lifecycle management	Finastra
Application of GPU in insurance analytics	Moody's
Application of simulation frameworks	Moody's
Asset/liability management	QRM
Budgeting and planning	Oracle
Capital modeling	QRM
Catastrophe modeling	Moody's
Climate risk management	Moody's
Cyber risk management	CyberCube
Data analytics	Oracle
Data management	Oracle
Economic/risk scenario generator	Conning
Innovation in actuarial frameworks	Aon
Insurance fraud analytics	Shift Technology
Insurance price optimization	Earnix
Location analytics	CARTO

Category award	2024 winner
Planning analytics	Aon
Portfolio analysis/hedging	QRM
Reporting and dashboarding	Oracle
Reserving	Aon
Risk management	SAS
Solvency II solution	SAS
Stress testing	Moody's
Structured products/variable annuities	Numerix
<b>Rising Stars</b>	
	AInsurtech
	ICEYE
	Solytics Partners

## BuySideRisk50 2024: ranking

2024 rank	Company	2024 rank	Company
1	Bloomberg	26	FINMECHANICS
2	FIS	27	SAS
3	S&P Global	28	CloudAttribution
4	ICE	29	Opensee
5	Numerix	30	TS Imagine
6	Vichara	31	Qontigo
7	MSCI	32	Raise Partner
8	Murex	33	SEI
9	SS&C	34	State Street
10	Moody's	35	SIX Securities Services
11	LSEG	36	BlackRock
12	RiskSpan	37	Prometeia
13	FactSet	38	MathWorks
14	QRM	39	Vola Dynamics
15	ION Group	40	Intellect Design
16	Oxane Partners	41	IDS GmbH (Allianz)
17	SimCorp	42	ZeroBeta
18	Linedata	43	OpenGamma
19	Finastra	44	MatLogica
20	Beacon Platform	45	swissQuant
21	Nasdaq	46	Detech
22	Cboe	47	Suite LLC
23	Confluence	48	ITO33
24	CRISIL	49	Nitrogen
25	Morningstar	50	PortfolioScience

## BuySideRisk50 2024: category winners

Category award	2024 winner
Overall winner	Bloomberg
<b>Chartis category awards</b>	
Breadth of functionality	ICE
Computational infrastructure	Murex
Impact	Bloomberg
Innovation	Numerix
Strategy	MSCI
<b>Industry category awards</b>	
Asset managers	SS&C
Hedge funds	Vichara
Pension funds	S&P Global
Private credit	Oxane Partners
Private equity	MSCI
Wealth management	Riskalyze
<b>Solution category awards</b>	
Cross-context analytics	Numerix
Equity performance attribution	Confluence
Fixed-income performance attribution	Bloomberg
Portfolio construction and optimization	MSCI
Structured note analytics	Numerix
<b>Rising Stars</b>	
	Investortools
	martini.ai
	Valitana

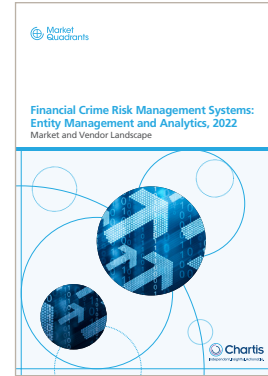
## 5. Further reading



**STORM 2023**



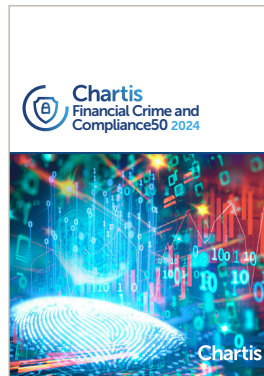
**Banking Analytics Solutions,  
2022: Credit; Market and  
Vendor Landscape**



**Financial Crime Risk  
Management Systems:  
Entity Management and  
Analytics, 2022; Market  
and Vendor Landscape**



**ESG Investment and Portfolio  
Analytics Solutions, 2022:  
Market and Vendor Landscape**



**FCC50 2024**



**RiskTech100 2024**

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