RiskTech 100 2019

Winners' Review

Chartis

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RiskTech 100 2019
Overall Winner
RiskTech 100 2019 FIS Functionality
RiskTech 100 2019 FIS Market Presence
RiskTech 100 2019 FIS Energy Trading (ETRM)
RiskTech 100 2019 FIS Commodity Trading (CTRM)
RiskTech 100 2019 FIS Insurance
RiskTech 100 2019 FIS IFRS 17
RiskTech 100 2019 FIS Market Risk
FIS
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The Risk Technology Landscape is Ever-Changing

New threats are emerging, and the pressure of operational challenges and opportunities facing the industry continues to sharpen the innovative edge of the RiskTech community. Right now, artificial intelligence (AI) and machine learning are the go-to technologies for those seeking answers to difficult risk and compliance problems. Meanwhile, a new "modular" approach to software and services is driving canny vendors to realign their business models in the new era of "mix-and-match" solutions.

For industry participants, this might seem like the best of times – new technologies, new business models and new opportunities abound. And yet, below the surface, threats and risks – some new, some familiar – fester and rankle.

Indeed, the wave of cutting-edge statistical techniques sweeping the sector, crested by AI and machine learning, threatens to leave a storm of costly confusion and misapplication in its wake, as institutions and their technology providers seek to exploit a new and, in some cases, relatively unfamiliar toolkit. And, of course, no matter how sophisticated your tools, mechanisms and defenses, you can expect them to fall into the hands of the opposition.

For every smart new tool on one side of the equation, there's an equally devious one on the other, pushing vendors to find newer, more innovative ways of quantifying the risks posed by cyber and other digital attacks. Battling "bad actors" has therefore become less a technology "arms race" than a struggle for knowledge.

Against this challenging backdrop, the *RiskTech100*® – the most comprehensive independent study of the world's major players in risk and compliance technology – analyzes and ranks the firms operating in this tempestuous market, throwing a spotlight on those delivering real excellence in their fields. Once again, I congratulate the firms recognized in this year's Winners' Review, and hope readers will enjoy this glimpse into the winners' circle.

Rob Stubbs
Head of Research, Chartis Research

Rob Stubbs, Head of Research
rob@chartis-research.com

Stuart Willes
Commercial Editorial Manager
stuart.willes@infopro-digital.com

Ben Sumner, Senior Editor
ben.sumner@chartis-research.com

Uzer Eusufy, Sales
uzer@chartis-research.com

Rémi Meyer, Sales
remy@chartis-research.com

Louise Spearman, Sales
louisel@chartis-research.com

Alex Hurrell, Commercial Subeditor
alex.hurrell@infopro-digital.com

David Pagliaro, Group Managing Director
david.pagliaro@infopro-digital.com

Ryan Griffiths
Senior Production Executive
ryan.griffiths@infopro-digital.com

Infopro Digital Services (UK)
Haymarket House, 28–29 Haymarket
London SW1Y 4RX
Tel: +44 (0)20 7316 9000

Infopro Digital Services (US)
55 Broad Street, 22nd Floor
New York, NY 10004-2501
Tel: +1 646 736 1888

Infopro Digital Services (Asia-Pacific)
Unit 1704-05, Berkshire House
Taikoo Place, 25 Westlands Road
Hong Kong, SAR China
Tel: +852 3411 4888

Twitter @ChartisRsch
LinkedIn showcase/chartisresearch

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RiskTech 100 2019

Overall Winner

FIS

In recent years, the coveted top position on the *RiskTech100*® list has perhaps become as straightforward to predict as some of the risk forecasts made possible through advancements in risk technology. It comes as no surprise that the unbeatable technology giant FIS continues its reign atop the charts and took the prestigious title of *RiskTech100*® Overall Winner for a fourth consecutive year.

By bringing together important components of risk management and leveraging new technologies to lower operational costs, FIS has been able to stand out from the competition year after year. Rob Stubbs, Head of Research at Chartis, says: "Risk technology markets are evolving, putting new pressures on users and vendors. FIS continues to adapt to these trends, as reflected in its continued strength in the *RiskTech100*® rankings."

The Florida-headquartered technology vendor has an extensive portfolio of software, services and outsourcing offerings for helping clients – among others – manage risk, streamline operations and meet regulatory requirements. The company now serves in excess of 20,000 clients in over 130 countries and employs more than 53,000 people worldwide.

In 2015, the vendor's position on the sell- and buy-sides was bolstered by its acquisition of SunGard, as complementary offerings brought it into new markets for financial technology services, adding asset managers, traders, custodians, treasurers, third-party administrators and clearing agents, as well as insurers, to the broader FIS client base.

FIS' success in different areas of the market has not only led to it winning the Overall award, but also topping the rankings in

(l–r) Rob Stubbs; Andrew Bateman, FIS; and Laura Galante

Insurance, Market Presence and Functionality for the fourth consecutive year; Market Risk for the third consecutive year; Energy Trading for the second consecutive year; and Commodity Trading for the first time.

For the FIS category wins this year, integration was a recurring theme, with the industry trend towards improved front-to-back integration being one of the drivers for new developments in areas ranging from energy to market risk.

Andrew Bateman, Executive Vice-President, Buy-Side and Cross-Asset Solutions at FIS, says: "We've identified an integrated front office as the future of risk management, and as such have combined our front-office platform with our powerful risk solutions. This integration of technology supports modern, user-friendly interfaces, and puts portfolio data at the fingertips of our clients. This also helps clients streamline data and processes for efficiency and insight through the front, middle and back offices, supporting multi-asset class electronic trading and complex investment strategies."

Chartis: Functionality

FIS

In healthcare, innovation in robotic surgeries is creating new opportunities while in design, developments in 3D printing are making an impression. Technology is shaping trends and creating new opportunities for growth across industries, and the *RiskTech100*® Functionality category celebrates vendors that continue to empower decision-makers in the financial services industry by leading the technology race in risk management. For a fourth consecutive year, FIS has won the title with its broad capabilities and impressive technology offering.


(l–r) Sean Hayward, Andrew Bateman and Josie Palazzolo, FIS

FIS continues to hit the mark with its risk management systems servicing banks, buy-side firms, insurance firms and other financial institutions. Andrew Bateman, Executive Vice-President, Buy-Side and Cross-Asset Solutions at FIS, says: "We are a trusted partner that has a long history of developing and delivering solutions, specifically to risk, compliance and finance professionals."

In terms of market risk, firms are increasingly looking for systems with capabilities geared towards meeting the demands of the front office, and FIS has continued enhancing the speed of processing and volume the platform can handle. In fact, 2018 has been about the combination of the new FIS in-memory aggregation and big data technology, allowing firms to hold previously unimaginable quantities of granular data.

With the focus still on regulatory requirements, the need for improved integration has also continued driving demand for projects designed to harmonize processes and counter the rising costs associated with regulation. This has been one of the areas in which the technology giant has stood out across the board. In terms of energy, Irina Reitgruber, Head of Product Management at FIS, highlights that large energy firms with multiple systems for trade management are increasingly focused on taking an enterprise view of risk – which is one of the reasons FIS stands out in this market.

The options for delivery have also led to success for the vendor. FIS is seeing more clients take its insurance risk platform as a managed cloud offering and, in the energy sector, its cloud and software-as-a-service offerings. FIS has released Aligne in the cloud, which helps tackle the business continuity challenge and allows customers to upgrade systems in the cloud with minimal downtime. "For the mission-critical components, you can now upgrade with no downtime," says Markus Seiser, Chief Operating Officer at FIS Energy, explaining that the containerized approach means a move to the public cloud can result in cost savings of 20% or more for clients.

Another key theme for FIS has been around leveraging machine learning and artificial intelligence (AI). FIS is in the process of incorporating AI for analyzing historical energy patterns and trading behavior, and in market risk, one of the focus areas is using machine learning to identify risks that would be less obvious to the human user.

Moody's Analytics Finishes #4, Wins Six Categories in 2019 Chartis RiskTech100®

RiskTech 100 2019
Moody's Analytics
Strategy

RiskTech 100 2019
Moody's Analytics
Model Validation

RiskTech 100 2019
Moody's Analytics
Current Expected Credit Loss (CECL)

RiskTech 100 2019
Moody's Analytics
Credit Risk for the Banking Book

RiskTech 100 2019
Moody's Analytics
Balance Sheet Risk Management

RiskTech 100 2019
Moody's Analytics
IFRS 9

Moody's Analytics provides financial intelligence and analytical tools to help business leaders make better, faster decisions.

We create confidence in thousands of organizations worldwide with our commitment to excellence, open mindset approach, and focus on meeting customer needs.

Moody's
ANALYTICS

Moody's Analytics

Winning a game of chess requires strategy and tactics, seeing where the game will go next and making deft, skilful moves accordingly. The winners in the *RiskTech100* ® awards are vendors thinking like grand masters, succeeding with decision-making and looking into the future to unlock opportunities.

Steve Tulenko, Moody's Analytics

One of the most successful in the results and rankings this year is Moody's Analytics – crowned the winner of the Model Validation, International Financial Reporting Standard (IFRS) 9, Current Expected Credit Loss (CECL), Balance Sheet Risk Management and Credit Risk for the Banking Book categories. It not surprisingly also landed the *RiskTech100* ® Strategy award, which celebrates leadership, execution and financial performance.

Moody's Analytics – which became a separate entity from Moody's Investors Service in 2008 – is a global provider of financial intelligence and analytical tools used for empowering decision-makers in the financial services industry. "Moody's Analytics continues to help its clients across the globe to satisfy their risk technology needs," says Rob Stubbs, Head of Research at Chartis: "The breadth of its offerings is reflected in another top-five finish and five solution category wins."

Steve Tulenko, Executive Director at Moody's Analytics, says: "We are continually pushing ourselves to help customers become more agile and make better decisions faster."

Regulators now expect the different departments within a bank to work well together, and new accounting standards such as CECL and IFRS 17 encourage the convergence of the traditional risk and finance functions. Moody's Analytics is making it easier for these different groups to collaborate and speak the same language. Tulenko refers to the holistic orientation of Moody's Analytics, crafting digitized solutions that support multiple constituencies. "We want the lender to see the same information as the credit portfolio manager, and the chief risk officer to have the same holistic view as the chief financial officer," says Tulenko.

Another big theme for Moody's Analytics is modularity. The company's solutions are being built on next-generation technology, and these modular solutions can be packaged together to meet a firm's unique needs, lowering the cost of ownership and increasing the potential for cross-functional work within the firm.

"We've been very intentional about architecting our solutions in a modular fashion," Tulenko says. "Constructing solutions this way makes them more responsive to our customers' needs, out of the box – delivering greater flexibility, more control, and much faster performance. Using our solutions, there's no need to involve the IT department to run a new set of analytics," explains Tulenko. "A customer can now ask 'what if?' and get an answer within seconds."

Chartis: Core Technology

Oracle

To run an effective risk management operation, firms rely on systems to optimize processes and respond to market change. The underlying technology is crucial in today's market, where firms are striving to do more with less, and vendors are playing a huge role in helping firms meet ever-changing customer requirements by pushing boundaries and taking technology to the next level. At the top of the leaderboard for Core Technology sits Oracle for a second year in a row.


(l–r) Garima Chaudhary, Sunil Mathew and Ambreesh Khanna, Oracle

Oracle Financial Services Analytical Applications (OFSAA) offers a portfolio of technology products for banking customers, and has continued to power ahead in the technology race. Ambreesh Khanna, Group Vice-President and General Manager of OFSAA, says the past year has seen Oracle incorporate new technology into several applications, continuously enhancing its enterprise risk suite. For customers, he says the changes are "lowering the cost of operations, as running these systems becomes cheaper as you move to open technology, and new technology allows them to do things that were previously cost prohibitive."

Recently, graph technology has been added into some applications to give users insight into how customers relate to a certain activity or event. "We have a product that uses graph technology to be able to visually show the connections between different entities," he says, adding that this type of technology can be particularly useful for entity resolution, anti-money laundering (AML) and customer screening purposes.

In addition, Oracle has in the past year introduced artificial intelligence (AI) into several applications. One of the areas where AI is making a difference, Khanna explains, is in the event-scoring application, which looks at generated events from an AML or any other alerting system and, with the use of machine learning, improves operational efficiencies by automatically assessing if an event is productive or non-productive.

Next is a transition into big data execution, which is being rolled out under Oracle's Next Generation OFSAA initiative. "All the applications will slowly be moving into big data; we want them to persist and execute natively in big data," says Khanna. OFSAA is beginning with the AML suite of applications due to the high number of credit card transactions, for example, which are monitored, and there are clear benefits to leveraging big data to improve efficiencies and detection in this area. The first product is scheduled to be available in the first quarter of 2019 and, after AML, risk and finance applications – including the cashflow engine – will also be leveraging big data technology. "We're completely rearchitecting and rewriting our cashflow engine right now," he says.

As Oracle continues to deliver technology enhancements, customers can expect improved cost optimization and new opportunities for leveraging unlimited amounts of data.

Chartis: Customer Satisfaction

iMeta

Learning how to make customers happy never goes out of fashion, and is an evergreen topic that has filled the pages of business books for decades. When it comes to risk technology, it is client lifecycle management company iMeta that appears to have discovered the recipe for success, achieving the highest score for customer satisfaction in the *RiskTech100®* ranking, and thus winning the *RiskTech100®* 2019 award in that category.

iMeta is all about clients – both from a technology and a delivery perspective. The UK-headquartered vendor provides client data management software and services to institutional brokers, dealers and wholesale banks, enabling organizations to automate and manage the complex data required to transact with customers and meet know-your-customer (KYC) and and anti-money laundering (AML) regulatory compliance needs.

The company is on a mission to provide technology that meet the client expectations set out in the sales process, and Ben Marsh, CEO, iMeta says: "What makes us stand out is a combination of being honest with customers about what we can do for them and then focusing very hard on helping the customers meet their objectives." To achieve this, there is a focus on understanding the key success criteria for customers, as well as delivering on promises relating to timelines and budgets.

From a product perspective, the offering is also purpose-built for the domain. "There are many elements of our product that allow it to be particularly successful," says Marsh, who highlights that data-centricity is integral to how iMeta delivers improved efficiencies to clients.

As KYC and AML functions mature, the industry focus is moving from processes

to data, which supports the business case for data-driven systems. Marsh says firms are increasingly trying to step away from process-driven architectures as the realization grows that data is at the core of robust risk management strategies – and this is what iMeta delivers. Customer risk profiles have generally been under regular review, but Marsh explains that the profiles do not usually change, so firms are now prioritising data-driven architectures that will allow them to identify events that trigger changes in a risk profile instead.

The trend towards data-centricity also contributes to upholding higher customer satisfaction. Customer experience and operational efficiency is driving a move to data-centricity, he explains, adding that banks with an architecture that allows them to reuse data on customers can deliver a more positive customer experience and also avoid duplication in data processing efforts. "As a customer, you want your bank to be able to reuse the data across many interactions," he says.

iMeta is intent on delivering the technology that will enable firms to do just this in the years to come. "We're trying to build on what we're doing already," says Marsh.

Chartis: Market Presence

FIS

When measuring success in growth rate, reputation and client wins, one vendor continues to head up the field and secure the *RiskTech100*® Market Presence award. For a fourth consecutive year, FIS has been celebrated for its impressive market penetration, market potential and momentum.

The Florida-headquartered technology vendor has an extensive portfolio of software, services and outsourcing offerings for the financial services sector. "FIS' technology solutions cover the entire financial ecosystem and are truly global. A worldwide leader in financial services technology, FIS helps financial institutions of all sizes put their risk management strategies into action," says Andrew Bateman, Executive Vice-President, Buy-Side and Cross-Asset Solutions at FIS.

FIS now serves in excess of 20,000 clients in over 130 countries and employs more than 53,000 people worldwide. "Working with organizations – from small domestic players to regional heavyweights and large, complex, global institutions – we empower our clients to advance their technology and systems in areas such as balance sheet, liquidity, credit and market risk management, actuarial modeling and insurance risk management, post-trade, cross-asset processing, investment accounting, corporate actions and energy trading risk management. We are a leader in the markets we serve, supported by a large, knowledgeable talent pool of employees," says Bateman.

FIS has continuously proved its ability to win new customers, and one of the vendor's success stories in 2018 has been in commodity trading, where FIS offers a software-as-a-service (SaaS) model that builds on the company's long history in the space.

(l–r) Rob Stubbs; Martin Sarjeant and Andrew Bateman, FIS; and Laura Galante

The vendor – which has also landed this year's *RiskTech100*® Commodity Trading award – has seen interest in its SaaS commodity offering boom, with 14 new client wins from the fourth quarter of 2017 to Q3 2018.

In insurance – another *RiskTech100*® category won by FIS – the vendor has also seen growth, and the FIS-managed cloud version of the insurance risk platform has been particularly popular with firms wanting increased flexibility and fast upgrades to better manage the wave of change in the insurance market.

"Globally, we've nearly 1,000 insurers using our insurance risk platform, with really strong growth in our customer base and a lot of new clients deploying the solution in the managed cloud," says Martin Sarjeant, Head of Risk Solutions Management and Strategy for FIS' insurance business, who explains that the growing appetite for taking the platform as a managed cloud offering is partly driven by firms' preparation for the introduction of International Financial Reporting Standard 17 – another focus area that won FIS a title in the awards this year.

FICO

Cyber attacks and fraud continue to make headlines so, unsurprisingly, a vendor driving change in this globally important area has won the *RiskTech100*® Innovation award for a second consecutive year. FICO's win reflects its focus on issuing new technology and empowering users to tackle the challenges they face in the cyber age.

The analytics software firm has been in the risk management space for the entirety of its 60-year history. Doug Clare, Vice-President for Product Marketing and Portfolio Strategy, says: "FICO was already doing credit risk-oriented projects in the 1950s and 60s." Its extensive experience has enabled the vendor to take foundational approaches to managing credit risk and apply them to other areas, including cyber risk and anti-money laundering (AML).

FICO is now recognized for challenging the status quo in these areas, and a recent development has been in the AML space. Until a few years ago, banks could get away with meeting the minimum standard, says Clare, but the regulators have since started enforcing AML regulation with much stiffer fines. These days, the question is: have you done as much as you can?

To ensure customers are set up to efficiently identify and prevent money laundering, FICO has introduced AML detection analytics into its core compliance offerings. "Fraud and AML are essentially similar challenges, and similar methods for detection of fraudulent and anomalous behavior can be brought to bear," says Clare.

Another area in which FICO is helping to make it more difficult for criminals to succeed is in the cyber world, where FICO has introduced its free and innovative cyber risk scoring FICO Enterprise Security Score (ESS).

(l–r) Peter Appl, Carol Byrne and Doug Clare, FICO

FICO ESS uses advanced analytics to forecast the risk of a material breach event, which means firms can take a proactive approach to cybersecurity and assess both cyber breach risk and potential impact on portfolios. "We think it's going to be really valuable, and we're offering it free forever for everyone," says Clare. "Creating a lingua franca for security risk is something we're really proud of this year."

But there is no time to rest on laurels, and 2019 will see FICO continuing to help customers challenge the norm. One example of a scenario that many can relate to is credit cards being declined by banks on trips abroad. This derives from a lack of systems integration, and technical connections between products are a key focus area for FICO. "Banks are under pressure to know their customer and, to enable this contextual relevant treatment, these solutions have to talk to each other in real time or near real time. We're all about making our solutions work well together to provide the opportunity for banks to have a contextually relevant and up-to-date dialogue with customers," he says.

RiskTech 100 2019

Industry: Banking

Oracle

While the banking sector continues to face changing regulatory and accounting standards, there is growing awareness that significant benefits can be realized by having systems that speak to one another and allow firms to be agile. The winner of the banking sector award is known for exactly this – Oracle was crowned the winner of the *RiskTech100®* Banking category for the second consecutive year for its suite of risk, finance and compliance applications.

Ambreesh Khanna, Group Vice-President and General Manager of Oracle Financial Services Analytical Applications (OFSAA), says Oracle stands out for its holistic suite of analytics applications that covers all areas of banking – risk, finance, compliance and the front office. "We cover this sector with an integrated set of applications. Integration is not an afterthought for us," he says.

There has been a growing focus on integration in the banking sector in recent years as regulators have increasingly been clamping down on poor data management and reporting procedures. In the case of Oracle, Khanna explains, customers have benefited from the work that was carried out on the platform a decade ago, as the applications are built on the same architecture. "To build OFSAA on a common platform has paid off in the last few years," he says, explaining that the way the product was built 10 years ago has "allowed us to do well in the banking arena", and customer demand for "an integrated set of analytical applications is not going to go away any time soon".

In the past year, a new achievement for Oracle was formalizing its continuous compliance strategy. "We've worked really hard to offer continuous compliance for the customers

Bhargava Srinivasa (left) and Ambreesh Khanna, Oracle

that take regulatory products from us," says Khanna, who adds that "all of the regulatory applications now come with a continuous compliance warranty." The promise means Oracle will carry on upgrading products to ensure compliance with changing regulations. "It gives customers a lot of reassurance when they see this published," says Khanna.

To further help customers meet regulatory requirements, the next step is making integration between risk and finance applications even tighter to promote data consistency. In addition, Oracle's big data programme – Next Generation OFSAA – is set to make risk processes even more robust by giving users an opportunity to process an unlimited amount of data, and the technology giant's focus on moving applications to the cloud will help customers scale applications and be better suited to respond to change. "We're moving everything to the cloud and that's already started," says Khanna. In the first quarter of 2019, Oracle plans to release its small-bank anti-money laundering and customer profitability suites in the cloud.

Industry: Buy-Side

MSCI

As the buy-side continues to undergo a phase of consolidation and increased focus on optimizing efficiencies to be able to tolerate tight margins, firms are increasingly looking for risk technology platforms and services that can fuel integration and help empower decision-makers. When it comes to servicing the asset management community, the one to beat is MSCI, winner of the *RiskTech100*® Buy-Side category for a fifth consecutive year.

With a focus on stress testing, multi-asset class risk, portfolio analytics and enterprise services and solutions, MSCI has expanded its risk management offering in recent times, continuously responding to new trends and challenges on the buy-side. The past year has seen the business focusing on building on its factor model franchise, enhancing fixed income analytics and integrating its MSCI risk management solution.

Jason Mirsky, Head of Analytics Product, Americas, at MSCI, says the company has a storied background in delivering factor models, and clients are increasingly asking for access to the underlying data to the MSCI models. As a result, MSCI now delivers fundamental data, making it easier for quantitative investors to develop their factor strategies. "What we're finding is that clients are looking to get new signals and avoid waiting for the next generation of factor models," he says.

MSCI has also started incorporating big data by normalizing datasets to further improve the MSCI factor models. "We're constantly looking at big data datasets and creating normalized descriptor data to add to our factor models," says Mirsky.

On the fixed income side, MSCI has also seen growing demand for new tools, which has

(l–r) Rob Stubbs; John Regino and Irene Galperin, MSCI; and Laura Galante

resulted in significant investments in building out fixed income analytics. MSCI completed an overhaul of its fixed income factor model in 2016. The new model sets out to bridge the needs between portfolio and risk managers. This year, the model has been included in the MSCI multi-asset class factor model, which also includes equity, commodities and private asset classes such as private equity, real estate and hedge funds. Other recent focus areas have been the MSCI Syndicated Loan Risk Analytics, MSCI prepayment models and MSCI single security models around convertible contingent securities, securitized products, and asset- and mortgage-backed securities.

Changes in regulation have also resulted in the buy-side ramping up the focus on liquidity risk. "Liquidity has been a huge topic over the past year ... Every asset manager needs a liquidity risk management program in place," says Mirsky. For MSCI, it is already a decade since the first liquidity model was created, but the Securities and Exchange Commission rule 22e-4 resulted in new interest, and the model has recently been improved with the addition of extensive fixed income market and liquidity data from IHS Markit, he explains.

Industry: Corporations

MetricStream

With risk management solutions servicing multiple vertical industries and regions, MetricStream has secured the *RiskTech100*® industry award for Corporations for a second consecutive year. MetricStream has enjoyed continued success with its cloud-based governance, risk and compliance (GRC) platform and M7 apps, which also won the vendor the Operational Risk & GRC category this year. The offering is designed to help companies preserve corporate integrity, protect their brands and drive business performance, and can be deployed in different verticals.

Ryan Rodriguez-Wiggins, MetricStream

The past 10 years have seen MetricStream increase its number of content partners and enhance its ability to quickly adapt the offering to specific industry needs. "The way we've architected the platform and our ecosystem of content partners enables us to transfer from one vertical to another," says Gaurav Kapoor, Chief Operating Officer at MetricStream. The common taxonomy layer in M7 is one of the aspects of the platform that facilitates adaptability, and Kapoor explains that changes can be made rapidly to meet the requirements of a bank versus, for example, a pharmaceutical company in the same region.

The trends driving change in terms of operational risk and GRC are similar across industries too, and Kapoor highlights that firms are aching to increase the role of the front line in risk management, address cybersecurity challenges and tie risk to performance to assess the acceptable level of risk for the business.

To address the need for improved integration of risk management procedures, MetricStream has focused on usability and made it easier for light users to get onto the system. "We strongly believe that, in the world of risk, it's important to bring the first and second lines of defense closer together, and our platform-based approach enables that," Kapoor says, adding that "the guys who see the real risks are typically on the front line".

Improved integration also helps reduce duplication of efforts across the enterprise. After the financial crisis, Kapoor says companies were overspending on risk and compliance as they could not afford another breach, but this is now changing as companies have a better understanding of what is needed and are focused on ensuring operational efficiencies. "We're seeing companies that might have been doing the same assessments of risk repeatedly across multiple lines of defense now using technology and process to rationalize that work and remove redundancies," he says.

The market has also seen a growing focus on the connection between risk and performance. Kapoor says chief risk officers are increasingly being invited to strategy tables. This can, for example, sometimes be to assess if taking a little more risk might be a feasible approach for adding to the top line. "All the themes tie in with the fact we're trying to help organizations increase their performance, but doing it with integrity," he says.

Industry: Insurance

FIS

While the insurance market is facing a massive overhaul of accounting and reporting procedures with the introduction of International Financial Reporting Standard (IFRS) 17 and changing tax standards in the US, firms are under pressure to upgrade technology and improve risk management. To help insurers on this journey, FIS is setting the standard high, winning the *RiskTech100®* Insurance category for a fourth consecutive year.

FIS continues to advance its suite of data and risk offerings for the insurance market. In the past year, for example, the vendor has started incorporating AVX technology for risk calculations and is making enhancements to support graphics processing units. Martin Sarjeant, Head of Risk Solutions Management and Strategy for FIS' insurance business, says AVX enables faster run times, which benefits all users, and is particularly relevant when it comes to calculations for Solvency II, IFRS 17 and hedging.

In addition, FIS has made significant strides to incorporate big data by writing to distributed databases, which allows the platform to handle greater volumes of data. "It's a massive addition to the insurance risk platform," says Sarjeant, adding that FIS has also extended the platform's coding language and mathematical ability with a new application add-on.

While IFRS 17 is driving change in Europe and Asia, the US insurance market is facing sweeping tax reform. Sarjeant says the new US tax regime introduces complex changes for insurers, and "we were quick to add those to our system so insurers could understand how the changes affected them."

In general, 2018 has been marked by an industry focus on accounting for long-duration insurance, driven by the Financial Accounting Standards Board's long-duration targeted improvements and significant changes to US Generally Accepted Accounting Principles. Despite this only being published in August, FIS already has a solution for clients, proving the vendor's ability to quickly respond to change.

Martin Sarjeant (left) and Sean Hayward, FIS

For insurers that want increased flexibility and fast upgrades to better manage the wave of change, the FIS-managed cloud version of its insurance risk platform has been drawing a crowd. "Globally we've nearly 1,000 insurers using our insurance risk platform, with really strong growth in our customer base and a lot of new clients deploying the solution in the managed cloud," says Sarjeant. He also explains that the cloud offering, which includes a management layer and 24/7 support, can typically result in a 30% cost saving. As well as avoiding infrastructure costs when they are not using the hardware, clients can benefit from the cloud's more attractive set-up costs.

The growing demand for alternatives to on-premise implementations continues to drive market innovation, and FIS is helping to lead the way. "Ultimately, we will move to a true software-as-a-service model, and that's what we're heading towards," says Sarjeant.

Industry: Sell-Side

Murex

With a six-year winning streak in the *RiskTech100* ® Sell-Side category, Murex has once again been crowned the winning vendor for its capital markets platform.

Murex's MX.3 platform offers a single platform for trading, risk management, collateral, operations, investment management, finance and treasury. Normand Tanguay, Head of Risk, Americas, at Murex, says sell-side clients value Murex's wide coverage of products across asset classes, the depth of functionality and the ability to deliver a front-to-back risk system.

The impending Fundamental Review of the Trading Book (FRTB) is driving a trend towards integration, as changing requirements are resulting in a growing need for alignment between the front office and risk management. For Murex, this has resulted in increased traction, as Tanguay explains MX.3 offers clients an integrated platform approach.

FRTB is just one of several regulatory requirements the sell-side is dealing with, and the need for flexible systems has become increasingly apparent because of the changing regulatory environment, coupled with the fast-paced nature of financial markets. "You want to have a system that's standardizing business processes so you're not reinventing the wheel. At the same time, you need the flexibility to customize certain things, which gives you an edge," he says.

One area where standardized approaches hit the spot is regulation. Murex is seeing firms looking for fast implementations of the new standard approach for measuring counterparty credit risk (SA-CCR), which is resulting in a more risk-sensitive approach.

Both SA-CCR and FRTB have been top

(l–r) Rob Stubbs; David O'Donovan, Christian Hoef and Mark Abrams, Murex; and Laura Galante

priorities for Murex in recent times, and the vendor now provides packaged offerings for regulations to allow a standardized implementation approach, which offers clients a starting point to facilitate faster compliance.

Another important area for Murex has been enabling firms to assess the total cost of trading and servicing the valuation adjustment – or xVA – desk. "There has been an increased focus on the ability to calculate the valuation adjustments pre-deal and actively manage the risk by calculating sensitivities around those," Tanguay says.

From a technology point of view, Murex has continued its cloud journey, which started with MX.3 being introduced as a cloud offering in 2017. "We see a lot of interest in using the cloud and leveraging the technology for enhanced performance, flexibility and resiliency," says Tanguay, who explains the sell-side is moving to the cloud not only for more compute power, but also to be able to adapt faster and use tools such as continuous integration. Next, Murex is exploring the use of machine learning in areas such as risk management or for lowering straight-through processing rates.

FICO

As firms are increasingly incorporating artificial intelligence (AI), technology is empowering users to do what was previously deemed impossible. In recent times, there has been widespread focus on use cases for AI, and topping the *RiskTech100®* chart is analytics software firm FICO, which was crowned the winner of the Artificial Intelligence category for 2019.

Doug Clare, FICO

While AI is relatively new for some vendors, FICO first built AI into products nearly 30 years ago, making it an early adopter and innovator in terms of AI in risk management and analytics applications. Doug Clare, Vice-President for Product Marketing and Portfolio Strategy at FICO, explains that AI is these days used across FICO's portfolio of analytics products and that it now has more than 100 patents filed in AI and machine learning methods. Use cases range from fraud detection to risk management to logistics optimization and, as a result, FICO has "a very rich portfolio of analytics techniques".

This year has seen FICO continuing to drive forward in AI following the release of the FICO Analytics Workbench xAI (explainable AI) Toolkit, which comes in the wake of new data privacy regulation and growing concern about transparency in decision-making. FICO's xAI is set to help firms explain how AI is used in decisions, and which data elements considered by a complex model have the most significant impact on outcomes. "When we use AI and the analytics are very complicated, it's often hard to understand how algorithms are formulating the decision they make, so explainable AI is very important," he says.

Released in September 2018, the new toolkit combines FICO's existing data science tools with open-source technologies. With the improved transparency and insight into algorithms offered by the toolkit, credit risk officers, fraud analysts and data scientists alike can explain the machine learning models behind complex AI-derived decisions, which can be valuable support for compliance and strategic reviews. In addition, Clare says the toolkit can help tackle the undeserved reputation AI has developed in the media for reducing freedom or destroying jobs, as it helps professionals understand and interact with AI-based systems.

FICO, which also won the Innovation award for the second year in a row, continues to build AI into its products, and next year is expected to be no different. "We're keen to bring more powerful analytics into our solutions," says Clare on FICO's future plans relating to AI. Although products such as FICO's intelligent fraud-detection platform Falcon is already all about analytics, there are other products in the portfolio where the emphasis has been on complex workflow management, such as the debt collection offering Debt Manager. "One of the things you'll see is more complex AI being pushed into product and domain areas that may have been more rules-driven in the past," he says.

Solutions: Balance Sheet Risk Management

Moody's Analytics

In a post-Basel market, succeeding with balance sheet risk management is crucial for avoiding holding excessive capital returns and missing out on revenue-generating opportunities. The vendors servicing this market are on a mission to help firms centralize data and models to effectively manage risk and optimize assets and cashflow. This year it is Moody's Analytics winning the *RiskTech100* ® award for Balance Sheet Risk Management.

The vendor leads the way with its integrated RiskConfidence platform, which streamlines processes by enabling firms to cover asset and liability management, funds transfer pricing, liquidity risk management, and business and regulatory reporting all within the same system. Nicolas Kunghehian, Director and Solutions Specialist at Moody's Analytics, says cost optimization and regulatory reporting have been key focus areas for customers in recent times, and this has strengthened the business case for moving to a single platform that covers all these functions. Operating with a single system is more convenient for clients, and easier from a scalability perspective, explains Kunghehian.

With an integrated platform, firms are looking at the same data for all transactions and are better positioned to manage different types of reporting and risk, all of which affect the balance sheet.

"The transaction data [being] used to assess credit risk, liquidity risk and interest rate risk is the same," says Kunghehian, and by leveraging Moody's Analytics, "they can do a lot for the three types of risk at the same time".

The integrated platform approach also benefits clients when it comes to pricing individual transactions, as firms are looking at an increasing number of metrics, and having the metrics in the same platform helps streamline operations and improve accuracy. "You need to have very granular information," says Kunghehian, adding that the requirements are also changing year on year.

To take balance sheet risk management a step further, Moody's Analytics has this year also stepped up into the cloud. At the start of the year, the vendor's first customer was live on RiskConfidence in a cloud environment, which offers faster implementation times and automatic upgrades. The appetite for cloud offerings is increasing, according to Kunghehian, and customers can benefit from new features without making changes internally.

For balance sheet management technology this is particularly relevant, Kunghehian says, as "each time there's a stress-test exercise there's something new required from the supervisor", and internal requirements are also changing. Moody's Analytics is working on adding both new modules and new data, with focus areas being introducing data and services relating to credit spread risk and more advanced tools for Monte Carlo simulations.

Solutions: Capital Optimization

Prometeia

Effective capital optimization is essential for any firm to generate the highest possible return on capital. The winner of the new *RiskTech100* ® Capital Optimization award is Prometeia.

In a market characterized by heavy regulation, stringent stress testing and strict requirements for capital buffers, optimizing capital resources has become increasingly important for banks wanting to remain competitive. To maximize profitability under the constraints of regulation, firms rely on integrated balance sheet management processes – which is where Prometeia is making a difference.

Andrea Partesotti, Prometeia

In 2017 and 2018, Prometeia invested in the development of a new generation of balance sheet management solutions to support decision-making processes and regulatory compliance of chief risk officer and chief financial officer departments. "Our new developments are all related to supporting a proper allocation of capital resources, maximizing the risk-adjusted profit potential and supporting regulatory compliance," says Andrea Partesotti, Director and Head of Enterprise Risk Management at Prometeia.

As part of the integrated balance sheet management platform, the vendor has launched a module specifically designed to support the latest European Union stress-testing exercise. "The module is there to make the lives of our clients easier," he says.

The latest developments also include the introduction of a new integrated capital planning tool to support asset-liability management – where Prometeia first started – and to be used by planning and control departments to manage assets and liability, and capital, in the same system. "In the planning process, they need to ensure the bank has sufficient capital and funding to support growth," says Partesotti.

Prometeia has also launched a new platform for managing advanced models needed to forecast key performance and risk indicators, which has been designed to help users digitalize complex processes, such as reverse stress testing and recovery and resolution planning, which are requirements under EU regulation. By using the tool, users can gain insight into what scenario would hurt the bank most, based on its existing strategy.

The next step for Prometeia is to continue supporting firms moving to a more integrated model, which would support risk management and capital optimization. Despite capital requirements, management and allocation being linked to balance sheet management, Partesotti says, banks are not yet relying on unique methodology and technology frameworks for these different functions, which need to be integrated. "We believe an increased number of banks will move to the new collaborative model, where capital would be managed jointly and they [the different departments] would rely on the same data and analytical tools," he says.

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Solutions: Client Lifecycle Management (CLM)

Pegasystems Inc.

Amid ever-changing risk and reporting requirements and a clampdown on a lack of compliance with know-your-customer (KYC) obligations, software company Pegasystems Inc. has triumphed with its low-code customer platform, winning the inaugural *RiskTech100*® Client Lifecycle Management (CLM) award.

Pegasystems Inc. has been helping global banks manage customer engagement and digital transformation in global banking for more than 35 years, offering out-of-the box low-code applications designed to automate processes from onboarding through to offboarding. Reetu Khosla, Global Head of CLM and KYC at Pegasystems Inc., says the Pega CLM application helps digitize and streamline front-to-back office processes and facilitates multi-jurisdictional, multiproduct client onboarding and KYC management. "The solution allows large global financial institutions to automate and future-proof regulatory compliance, operations and risk changes – allowing banks to rapidly adapt to market changes with zero coding. We are designed to scale," she says.

Customers are still faced with banks failing to share data across systems and operate in silos, and many will be used to supplying information multiple times when dealing with different business lines, jurisdictions and products. This scenario is not surprising considering the widespread challenge of dealing with fragmented and siloed processes and systems. Khosla says Pega CLM allows banks to integrate and "wrap and renew" across – sometimes 80–100 – legacy systems. This allows them to drive a customer-centric, digital client onboarding experience with one view – end-to-end orchestration, front-office transparency and speed – that can help ensure banks are able to reuse data more efficiently across the organization.

(l–r) Deep Hansra, Jason Marason, Harry Simmons, Nancy Weir, Paul Sullivan, Brett Smiley, Ajit Tharaken, Dave Brown and Kevin Baba, Pegasystems Inc.

There are currently 30,000 due-diligence rules in the system covering around 60 jurisdictions and including regulations ranging from anti-money laundering and tax to counterparty risk. By regularly updating KYC rules and logic, clients can future-proof and adapt in days as opposed to months, without any necessary coding.

New this year is the Pega Blockchain Innovation Kit, which explains how Pega can contribute KYC and CLM datasets to Ethereum – a predominant blockchain technology – and receive verified due diligence back into their Pega CLM using permissioned blockchain. By utilizing blockchain for KYC, firms may be able to eliminate duplicate efforts by vetting customers in a shared distributed ledger.

When it comes to cutting-edge technology, Pega continues to set the standard high, and the system has already long leveraged robotics and artificial intelligence (AI), and continues to expand usage of these technologies to enhance capabilities. "Robotics and AI is inherent in our technology," says Khosla, who explains that Pega is constantly looking at new innovative use cases for AI.

Solutions: Commodity Trading (CTRM)

FIS

With the commodity space faced with high volatility and pressure on margins, firms continue the search for robust risk management systems that deliver on promises for flexibility and cost optimization. FIS secured the *RiskTech100*® award for Commodity Trading solutions this year, making its mark with its software-as-a-service (SaaS) commodity offering.

While FIS has an extensive offering of on-premise technology for meeting risk management needs, the story in commodities trading and hedging is all about the SaaS model. The FIS SaaS commodity offering – which sets out to provide firms with lower total cost of ownership, seamless quarterly upgrades and quality analytics – grew out of an industry demand for a cost-efficient and scalable infrastructure.

"Volatile commodity prices are driving hedgers away from Excel and onto more sophisticated systems, while at the same time shrinking margins are reducing IT budgets. An SaaS offering equipped with the power analytics of FIS is well positioned to serve these dueling mandates," says Markus Seiser, Chief Operating Officer at FIS Energy.

In the past year, FIS has seen interest in the SaaS commodity offering booming, with 14 new client wins from Q4 2017 to Q3 2018. Half of the new names are in food and manufacturing, where Seiser says firms have faced tightening margins, and FIS has offered an SaaS model that builds on the company's long history in the space. In addition, FIS has invested in its food and beverage, and manufacturing, offerings by expanding its physical capabilities to include items such as a physical ticketing module, introducing needs planning and forecast

(l–r) Rob Stubbs; Todd Wolk, FIS; and Laura Galante

reporting, and adjusting its hedge accounting module to support International Financial Reporting Standard (IFRS) 9. "We very quickly established a strong position across the food and manufacturing space," says Brian Quinn, Strategy Planning Director, Commodities at FIS.

In 2019, FIS will continue to bring products closer together with an expanded cloud presence, seamless integration between products and deeper expansion into metal and agricultural logistics. "What customers can expect from us is a better front end, improved customization, and ability to capture logistics," says Seiser.

The FIS commodity SaaS offering will leverage the enhancements made to the user interface by FIS Energy, which is set to create a consistent user experience. There are also plans to move to the cloud, which will make customization easier to achieve, and customers can expect improved opportunities for customization in the application in the future. In addition, FIS is continuing to build out in the agricultural space, and Quinn says: "We have another partner to help bring us into logistics."

Solutions: Credit Risk for the Banking Book

Moody's Analytics

With the last few years of tightening credit spreads, the case for having a strong model for predicting potential credit losses has become even more prominent. The unbeatable winner in the credit risk space is Moody's Analytics, previous winner of the Credit Risk award two years in a row, which has now also secured the new *RiskTech100®* Credit Risk for the Banking Book award.

Ed Young, Moody's Analytics

Moody's Analytics became a separate entity from Moody's Investors Service in 2008 and has continued to wow the market with RiskCalc, its global suite of models for evaluating commercial and industrial credit risk. Ed Young, Senior Director at Moody's Analytics, says there are now more than 550 customers using RiskCalc. "We have subject matter expertise and offer best practices in credit risk scoring. We understand our customers' problems and deliver both quality and quantity of credit risk data to drive analytics," he says.

As interest in credit risk is soaring, the vendor has continued to refine the models to meet changing requirements. Some of those changes derive from new accounting standards, including the Current Expected Credit Loss standard and International Financial Reporting Standard 9, and Young says these are both driving the ever-increasing demand for credit risk models and loss estimation. As part of RiskCalc, Moody's Analytics offers off-the-shelf models, but the team is also able to develop models customized to the characteristics of customer portfolios. "It's more important than ever to tailor risk models to your experience and monitor the performance over time, to ensure the models continue to provide accurate estimates," he says.

To continue meeting the changing requirements for credit risk models, clients are looking for more than technology and data – particularly considering the need for tailor-made solutions. "It's not just about tools, but our knowledge and experience as well," says Young, who explains that Moody's Analytics stands out for its research expertise coupled with industry-leading credit risk data and analytics.

One of the recent data enhancements has been that of data on small businesses. In June 2018, Moody's Analytics launched its RiskCalc Small Business Model, which is designed to help firms evaluate the creditworthiness of small businesses by calculating a credit risk score and other related credit metrics.

Going forward, customers can also expect to see RiskCalc enhancements driven by the acquisition of Bureau van Dijk in 2017, the information provider that aggregates, standardizes and distributes data on more than 220 million companies. As the private company data can be used for supporting credit analysis, the acquisition is another win for Moody's Analytics' credit risk offering. "Last year we strategically combined these data assets, and we're now using them to improve our credit risk solutions," says Young.

Solutions: Current Expected Credit Loss (CECL)

Moody's Analytics

The new accounting standard for Current Expected Credit Loss (CECL) is set to change how firms measure expected credit losses on financial assets. As firms gear up for the arrival of the new standard, technology vendors have been fine-tuning new CECL systems, and Moody's Analytics came out on top in the new *RiskTech100*® CECL category.


Eric Ebel, Moody's Analytics

The Moody's Analytics ImpairmentStudio solution has been specifically designed for CECL users to automate and simplify the complex processes needed to meet the new accounting standard. Moody's Analytics combines its rich credit risk data, best-in-class analytics and impairment accounting experience in this new cloud-based platform, which is celebrated for its completeness and broad CECL automation capabilities. Eric Ebel, Managing Director at Moody's Analytics, says: "The ImpairmentStudio platform allows firms to efficiently address the CECL standard by streamlining the bank's internal processes."

The final version of the CECL standard was issued by the Financial Accounting Standards Board in 2016, at which time Moody's Analytics was actively engaged with institutions outside the US on International Financial Reporting Standard (IFRS) 9. "The experience and lessons learned from IFRS 9 implementations helped us to build a first-class CECL solution," says Ebel.

With the deadline for CECL approaching, firms are now looking at how to comply. For Moody's Analytics, the first group of CECL customers – those that have to comply in 2020 – are approaching parallel runs, and the vendor is now working with smaller institutions with one or two more years to meet the standard. "Community banks are very interested in learning from the experience we've had of working with the larger banks, while making sure our solution is scalable to their specific challenges," Ebel says, explaining that new features in ImpairmentStudio have been specifically developed or adapted to address the needs of community banks.

In addition to focusing on helping smaller firms, Moody's Analytics is also partnering with its clients to help them realize the benefits of CECL implementation beyond pure compliance. CECL is just a first step and the industry is now starting to look at how implementation can profit other business activities. "We're seeing more and more institutions looking past the initial deadline," says Ebel. "The questions being raised now include: How do I leverage my investment in CECL to strengthen my risk management framework, but also to gather critical insights and eventually make better business management decisions?"

For Moody's Analytics, which has capabilities and solutions ranging from loan origination and credit assessment to portfolio management and strategic planning, the plan is to help clients put the puzzle pieces together. "Connecting these different elements and making sure they're not siloed is next," Ebel says, adding that firms who take that broader view will be uniquely positioned to navigate changing market conditions and remain competitive in the future.

Solutions: Cyber Risk Management

IBM

With a skill shortage in cybersecurity, and cyber attacks becoming an ever-increasing concern, efficient systems to protect against cyber criminals is essential. Leading the race in cyber risk management is IBM with its rich set of offerings in the cyber and financial risk space.

IBM's flagship cyber risk product, QRadar, offers the opportunity to detect, prioritize and respond to threats across on-premises and cloud-based environments. Lauren Horaist, Product Marketing Manager at IBM QRadar, says the platform is designed to improve efficiencies and facilitates rapid decision-making. "It gives customers the ability to boil down billions of data points into an actionable, prioritized list of, on average, fewer than 20 offenses per day," she explains.

IBM QRadar Advisor with Watson enables firms to leverage artificial intelligence for initiating investigation processes. The offering automatically investigates incidents by using cognitive intelligence, taking observables within a particular incident to provide context and visibility into the greatest risks. IBM has recently added a mapping feature, which shows analysts how far the incident has progressed, enabling security teams to address the most advanced attacks first. In November, IBM also introduced the functionality for firms to view historical actions relevant to new incidents. "We provide analysts with insight into how they've responded to that [type of incident] previously," says Horaist, explaining that this can help address incidents quicker as past responses can be indicative of how they would want to respond.

To further improve capabilities, IBM also released the QRadar Assistant App, which provides guidance that continuously improves cybersecurity. Horaist says the app addresses the skill shortage in the industry and the fact analysts are under time constraints. By using the assistant, users get tips on how to tune the environment and improve overall security.

IBM has also invested in making QRadar fit for the cloud journey. QRadar can be deployed to protect cloud resources, and the QRadar Cloud Visibility app is a multicloud offering enabling analysts to visualize potential offenses in Amazon Web Services, Microsoft Azure and IBM Cloud. "It takes in your cloud data sources and provides you with clear dashboards, so you can understand what's happening, and because that data is analyzed as part of your core enterprise monitoring program, you can see how and when threats progress across different environments," explains Horaist.

In 2019, cloud is set to continue shaping the agenda, as customers increase cloud adoption. IBM plans to build out the QRadar Assistant App to help customers be more effective without increasing resources, continue building out the QRadar Advisor with Watson cognitive intelligence capabilities, and carry on innovating in the use of behavioural analytics where it is applying machine learning to help users understand unknown threats.

Solutions: Cyber Risk Quantification

FICO

With the past year seeing cyber attacks again affecting large companies and causing share prices to plummet, it is no surprise cybersecurity experts and technology solutions are in hot demand. Analytics software firm FICO – recognized in the awards last year for innovation – is setting the standard high and this year won the *RiskTech100®* Cyber Risk Quantification award.

(l–r) Rob Stubbs; Peter Appl, Carol Byrne and Doug Clare, FICO; and Laura Galante

FICO Enterprise Security Score (ESS) uses advanced analytics to forecast the risk of a material breach event. Launched in 2017, it enables an organization to quantify cybersecurity risk mathematically. To do this, FICO acquired QuadMetrics – a firm with predictive analytics for rating the security of an organization – and coupled its technology with FICO's own artificial intelligence internet protocol. Doug Clare, Vice-President for Product Marketing and Portfolio Strategy at FICO, says the result was the first fully empirical, supervised approach to quantifying cyber risk: "As business people, we manage what we measure. If you can quantify it and understand it, then the world of private industry can do something about it."

For many, doing something about cyber risk continues to climb the agenda as firms are increasingly seeing the consequences of security breaches all over the news. This year, FICO has seen particularly good traction in insurance, and Clare says: "We're allowing insurers to better price cyber risk [by using FICO ESS for forecasting risk]."

The market is quickly moving beyond insurance, however, as regulators set the bar higher by pushing out new requirements for data processing online to protect consumers. Europe's General Data Protection Regulation – which transformed how data can be collected, stored and processed in an online world – has fueled change in the past year, and Clare highlights that these types of regulatory reforms continue to cause an upswing in demand for cyber risk quantification tools.

With increased demand for cyber risk quantification, FICO is looking to become the space's de facto standard following new partnerships and wider market adoption. In October, the US Chamber of Commerce and FICO released the Assessment of Business Cybersecurity, the first of its kind, which is powered by the FICO Cyber Risk Score and measures the cybersecurity risk of the entire business community and across key sectors.

Next it will be about driving adoption to help further manage supply chain risk. "We're really looking in the coming year to drive adoption for it [FICO ESS], not only for insurance but for third-party risk management – helping organizations understand their exposure and drive efficiency into vendor audits," says Clare, who adds that the auditing process in use today is often based on subjective views of risk, and FICO ESS can bring an objective view to the table by mathematically quantifying cyber risk. "FICO drives efficiency and objective accuracy into supply chain risk management," he says.

Solutions: Data Integrity & Control

Oracle

As regulators have continued to zoom in on data quality, firms have increasingly introduced initiatives designed to get the foundation right and improve integrity and control. The Basel Committee on Banking Supervision's principles for effective risk data aggregation and reporting (BCBS 239) have created new interest by demanding firms prove confidence in data, and a new requirement for data governance will have been a wake-up call for some firms.

The *RiskTech100* ® Data Integrity & Control category – which was introduced this year and celebrates the vendors helping the industry on the journey to BCBS 239 compliance and with robust data management processes – has been won by Oracle, which has recently taken new steps to help firms gain confidence in their data.

Ambreesh Khanna, Group Vice-President and General Manager of Oracle Financial Services Analytical Applications (OFSAA), says data governance and data management have been an important area of focus for Oracle. "We've been building out a product that is targeted at chief data officers and data managers," he says, explaining that the new application, Data Governance Studio (DGS), is designed to help firms succeed with data governance.

DGS was released earlier in 2018 and aims to quantify data governance to help ensure data integrity for regulatory reporting. It works by linking to the internal data repository and delivers automatic and continuous monitoring capabilities of critical data elements used across regulatory reporting. "It comes [prepackaged] with what we believe are the critical data elements, and it tracks the lifecycle of those critical data elements," says Khanna, who adds that the

Bhargava Srinivasa (left) and Ambreesh Khanna, Oracle

monitoring can help users assess if their data governance regime is actually working and whether data integrity is improving. DGS alerts users to issues with variances or errors in data that would be used for reporting, and it will give a percentage score on the data that has defaulted.

Next year, customers can expect to see Oracle further expanding the number of use cases for DGS, taking the application beyond regulatory reporting and into risk and finance integration. "Risk and finance data elements are well understood and defined, and need a strict level of governance to ensure integrity," says Khanna, explaining that content sets are now being built out to enable the same type of automatic tracking of predefined critical data elements for this area.

Metadata is another focus area, with interfaces to provide metadata management for data lineage. "We want to be able to supply metadata from OFSAA to metadata management tools," says Khanna, explaining that Oracle already has Oracle Enterprise Metadata Management for cataloging metadata and DGS packages metadata, and could hand it over to other metadata tools.

Solutions: Energy Trading (ETRM)

FIS

The past year has been a wake-up call for the energy trading market, where bets have made headlines for all the wrong reasons, and there is an ever-growing case for enhancing risk management processes and technology. To help firms along the way, FIS – this year's winner of the *RiskTech100*® Energy Trading (ETRM) category – offers risk management capabilities geared towards real-time trading activities and opportunities for customers to take an enterprise-wide approach to risk management.

The FIS Energy offering includes Aligne, which is designed to streamline and integrate trading and risk management; Kiodex, a software-as-a-service (SaaS) ETRM platform for real-time trade capture, mark-to-market and risk management; and IntelliMatch Derivatives, a reconciliation platform for efficiently reconciling spots, futures and options trades.

With an extensive trading and risk management offering, FIS continues to stand out for its ability to help firms gain an aggregated view of risk, says Irina Reitgruber, Head of Product Management at FIS Energy. Large firms with multiple systems for risk management are increasingly focused on taking an enterprise view of risk, she says, and "that's one of our strengths". With the focus on over-the-counter margining, for example, risk management systems benefit from being integrated across the organization to ensure users are updated on related risk positions to be better able to manage their margin requirements.

The constant change and complexity faced by energy traders are also shaping risk technology. Recent years have seen a revolution in electricity trading, and global trends – such as electricity consumers becoming energy suppliers, or "prosumers", and the growing demand for electric-car

(l–r) Rob Stubbs; Todd Wolk, FIS; and Laura Galante

parks – are resulting in changing system requirements. Reitgruber says market changes mean firms need a portal to interact with these customers, as well as a big data system for collecting vast amounts of data.

To improve analytics in this data-intensive sector, FIS is in the process of incorporating artificial intelligence for analyzing historical patterns and trading behavior, which is set to continue to be a focus area next year.

As technology requirements are becoming increasingly complex, there is also a move towards alternative infrastructures, and FIS' SaaS model and new cloud offering are hitting the mark for customers wanting a service-based setup. FIS Energy has now released Aligne in the cloud, and the approach taken by the vendor has been geared towards tackling the business continuity challenge and allowing customers to upgrade systems run in the cloud with minimal downtime. "For the mission-critical components, you can now upgrade with no downtime," says Markus Seiser, Chief Operating Officer at FIS Energy, explaining that the containerized approach means a move to the public cloud can result in 20% or more cost savings for clients.

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Solutions: Enterprise Stress Testing

MSCI

In the past decade, the market has seen a growing focus on enterprise stress testing to forecast event-related risks and assess the potential losses linked to different hypothetical adverse scenarios. Topping the chart for efficiently assessing these different scenarios to mitigate risk is the *RiskTech100*® 2019 Buy-Side category award winner, MSCI, which has outshone the competition with its stress-testing capabilities and expertise in risk management to be crowned winner of the Enterprise Stress Testing category too.

MSCI has an extensive library of historical and predictive stress tests, which can be customized by adding shock parameters or dynamically building a correlation matrix with different sampling assumptions, among other measures. This year, some of the most relevant scenarios for stress tests have been: Italy potentially leaving the EU; a trade war between China and the US; and potential contagion among emerging market countries from the deterioration of Argentina and Turkey's currencies, explains Jason Mirsky, Head of Analytics Product, Americas, at MSCI.

The market has been characterized by a rise in volatility and signs of breakdown in existing correlations. This has led to new challenges that stress testing can help to address. To relieve its clients of this burden, MSCI has devoted research teams to following trends, assessing what the market can expect if a situation worsens or improves, and thus helping them to remain resilient in tough economic environments.

MSCI is typically modeling several scenarios – bad, moderate and mild – and clients can then assess how their portfolios would be affected based on the various results. "We're creating these scenarios as a research-as-a-service

Irene Galperin (left) and Andy Sparks, MSCI

[offering], and we calculate how their portfolios might fare," he says.

MSCI also offers clients the ability to create their own stress tests in the application. To ensure these tests are realistic, the past year has seen MSCI add a stress-test assessment functionality, which means firms avoid running stress tests based on scenarios that could never happen. Mirsky explains that some risk factors will be interlinked, and the new capabilities in the application will pick up on this and provide users with feedback during the stress-testing process. "You can use these tools to create better and more robust stress tests," he says, adding that, while some users appreciate complete flexibility in the system, the new enhancements now offer helpful guidance to users.

The improved tools will continue to enable users to meet requirements from regulators, which have been driving change in the use of stress tests ever since the 2007–08 global financial crisis. Going forward, MSCI will continue to follow regulatory trends to respond to market change. "We're constantly adding new scenarios, tweaking capabilities, and keeping on top of regulation," says Mirsky.

Refinitiv

Continuously driving for increased transparency in evaluated pricing, firms are looking for pricing services that provide insight into underlying data and methodologies to meet requirements from investors and regulators alike. To keep up with changing demands and the complexity facing firms in today's market, there is a need for vendors that are ready to step up their games. The player heading this year's chart for the *RiskTech100*® Evaluated Pricing award is Refinitiv.

Christina Rosales, Refinitiv

Refinitiv – formerly the Financial & Risk business of Thomson Reuters – has a long history in evaluated pricing and has outshone the competition with an offering that stands out for its coverage, quality of pricing and timeliness of delivery. Jayme Fagas, Global Head, Valuations and Transparency, at Refinitiv, says customers are at the core for Refinitiv, which is prioritizing face-to-face meetings to listen to and ensure alignment with customer needs. "We've gotten particularly good at understanding the customer workflow," she says.

As a direct response to listening to customer requirements, Refinitiv has focused on adapting its intraday offering. The move to intraday was a major enhancement for the vendor: government and corporate bond prices, for example, are now available throughout the day, as they are constantly ticking and moving with their underlying benchmarks. "We're also really continuing to hone our skills, focusing on hard-to-value instruments," says Fagas, who highlights a growing demand for pricing of complex derivatives.

In fact, derivatives pricing has seen improvements in 2018, with enhancements allowing Refinitiv to handle a high volume of vanilla derivatives. "Clients are not just going to send one trade at a time, but they want pricing of hundreds or thousands at the same time," says Fagas, explaining that Refinitiv can now meet these requirements.

Another area of focus has been municipal bond pricing, as consolidation of vendors in the municipal bond evaluations space led to a gap in the market for a secondary pricing source. "This was our major focus in 2017 and it came from listening to our customers," she says.

As well as coverage, Refinitiv is also responding to changing requirements for transparency, which has been a key focus area in evaluated pricing for a number of years now. Many enhancements have already been made to further support the need for transparency, and one of these is the introduction of the Thomson Reuters Pricing Service evaluation score, which will help firms defend prices and comply with regulation.

Going forward, customers can expect Refinitiv to become even more transparent, says Fagas, explaining that making improvements to transparency is not a single-year program. The initiative will carry on in 2019 when Refinitiv also plans to further improve derivatives pricing services across the board.

Solutions: Financial Crime – Applications

NICE Actimize

In some cities there are simple precautions one can take to avoid crime: joining a neighborhood watch scheme, leaving the lights on, parking a car in lit area, for example. But practical advice is not always this straightforward when it comes to preventing financial crime. This continues to be a pressing topic for banks, as markets are rapidly changing and criminals are finding new ways to 'deal in the dark'. To fight back and minimize losses, firms rely on technology to monitor systems and processes, and NICE Actimize has, for the fourth consecutive year, topped the charts in the financial crime space, winning the *RiskTech100* ® Financial Crime – Applications category for 2019.

Last year the winning vendor launched its Autonomous Financial Crime Management strategy designed to help make financial crime management fully automated and leveraging advanced analytics and artificial intelligence (AI). "This was the beginning of a new era of innovation from our side," says Erez Zohar, Global Head of Product, NICE Actimize.

To help banks on the journey to autonomous fnancial crime management, NICE Actimize has been pumping out new releases that have disrupted the status quo, and is augmenting applications with machine learning analytics provided in the cloud. With ActOne, which was released earlier this year, Actimize has brought an AI-enabled next-generation alert and case management platform to the market, taking the concept of investigation and infusing it with intelligence from everywhere possible to deliver a smarter way for banks to fight financial crime. "Our focus is to reduce investigation time by at least 70%," says Zohar, explaining that this represents Actimize's first major step towards helping customers achieve autonomous financial crime management. In addition, the new Actimize Watch helps customers monitor performance by creating an optimized model to improve the detection rate.

(l–r) Richard Tsai, Craig Costigan, Anne Liegel and Lilach Shenkar, NICE Actimize

For Actimize, current market trends – including product innovation and new regulation in financial services – have led to expansion both of technology and coverage, with other recent system changes relating to everything from payment solutions to added capabilities for customers to develop and expand systems as needed. "There is a need for financial services organizations to have the ability to execute on rapid innovation," says Zohar.

In October 2018, Actimize introduced X-Sight, an advanced machine learning-based platform as a service designed to power the industry's first financial crime risk management marketplace. "It's really a game changer," says Zohar, explaining that X-Sight allows Actimize customers and third-party vendors to leverage Actimize's technology and build and curate their own solutions in the cloud. "The idea is to allow the client to innovate quickly, offer clients a freedom of choice, and allow you to completely develop your own analytics and service," he says.

Solutions: Financial Crime – Data

LexisNexis Risk Solutions

As financial crime investigations continue to hit headlines and bring down share prices, putting in place the necessary systems and processes to comply with regulation and protect against operational and reputational risk is growing in importance. Having the right technology is a good starting point, but to succeed in minimizing risk of exposure to bribery, money laundering and corruption, ensuring quality data is feeding the systems is also crucial. Winning the first *RiskTech100* ® Financial Crime – Data award is LexisNexis Risk Solutions.

Offering extensive data services for financial crime compliance, LexisNexis Risk Solutions cover global sanction watchlists as well as digital and physical identity data. Daniel Wager, Vice-President, Global Financial Crime Compliance at LexisNexis Risk Solutions, says: "The award validates our significant investment in risk data, which we collect and curate to provide our customers with the highest-quality data to support effective risk decisioning."

Although regulations relating to bribery, corruption and money laundering have been in place for many years now, cases continuing to make headlines drive demand for improved risk data. Recent years have seen LexisNexis Risk Solutions continue to invest in risk datasets – such as sanction ownership, state-owned enterprises, politically exposed persons and corporate data – both in terms of growing direct sourcing activities and leveraging partners and public sources. The vendor has in recent years added hundreds of researchers, expanded sources in all regions and language coverage.

Wager says researchers play an essential role in identifying and collecting relevant content as customers need fast access to accurate information to facilitate quick decision-making.

(l–r) Rob Stubbs; John Campbell, LexisNexis Risk Solutions; and Laura Galante

While a machine may be able to identify if someone is named in a news article or government bulletin referencing financial crime, he says, a researcher can establish if the named individual or company is a party of concern, mentioned as a witness or in another context that would not pose a risk to an institution. "The continuous enrichment and enhancing of the depth and breadth and value of our content is really important because there are companies out there that collect and neglect," he says.

The next step will be to help firms bring financial crime prevention further into the digital age and assist them in efficiently monitoring and leveraging information about digital identity data points to address financial crime risk, money laundering, corruption and sanctions. "We're at a very exciting point of significant innovation, where we are in the lead of [addressing] digital attributes," says Wager. The new development comes following the LexisNexis Risk Solutions acquisition of digital identity specialist ThreatMetrix earlier in 2018, and it will mean firms can analyze new data that could identify potential risk, such as proxies or virtual private networks that may be linked to illicit financiers.

Solutions: Fundamental Review of the Trading Book (FRTB)

IHS Markit

The new Basel market risk requirements set out in the Fundamental Review of the Trading Book (FRTB) are expected to transform risk calculations, and the looming deadline means decisions are being made on how to prepare for this change. IHS Markit was crowned winner of the first *RiskTech100®* FRTB category.

The IHS Markit FRTB Solution Suite can integrate with existing risk management infrastructure and processes, and the offering is designed to help accelerate FRTB programs, reduce costs and help firms manage the capital impact of the regulation. Andrew Aziz, Global Head of Financial Risk Analytics, says the IHS Markit FRTB Solution Suite has been designed to be modular to complement an existing infrastructure – much of which is software as a service, which means customers benefit from low cost of adoption and fast implementation times.

IHS Markit's background in market data has also given the vendor a unique starting point for approaching FRTB. "It is the combination of the data and the technology that we provide that I really think make us stand out in the industry," he says.

The first offering in the suite was the FRTB Modellability Service, which can be used to test liquidity of risk factors and, in the past year, IHS Markit has continued to expand data coverage. "IHS Markit had strengths in certain areas, and we've now very aggressively expanded the asset class coverage to include equities and commodities," says Aziz.

The developments go far beyond data, however, as the past 18 months have seen the entire FRTB suite maturing. Aziz says IHS Markit initially entered the space due to FRTB introducing a need for modeling and proving the liquidity of risk factors before using them in calculations, and thus released FRTB Modellability Service. As requirements have progressed, the IHS Markit FRTB offering has been further extended to include the FRTB Scenario Service – which enables clients to create the required scenarios to manage liquid and non-liquid risk factors – and FRTB Capital Analytics for analytics requirements.

(l–r) Rob Stubbs; Andrew Aziz and Torjus Dalen, IHS Markit; and Laura Galante

With the combination of the three products, IHS Markit is ready for the new year when FRTB programs are expected to shift up a gear. "In 2019, banks have to make decisions on what approach they are going to take for capital analytics and start building out, so they can run in parallel for a couple of years," says Aziz.

In the long term, IHS Markit also plans to take risk analytics beyond FRTB. "We're seeing interest from clients in expanding the offering to broader scenario capabilities," says Aziz, explaining that the flexibility the system offers around risk factors opens up a whole new market, and there is an opportunity to roll out the services to the buy-side and other areas within the banks.

Numerix

Once, pricing at the end of the day was sufficient for meeting risk management expectations, but a wave of regulation has fueled a move to more robust procedures that reflect the nature of the markets. Markets never sleep and prices are subject to change at any moment, which means the winners in the front-office risk management space are the ones helping firms upgrade to systems suited to a real-time environment. New to the awards this year, the Front Office Risk Management category reflects this market trend, and the winner of the prestigious award is front-office veteran Numerix.

James Jockle (left) and Irina Slobodyanyuk, Numerix

Founded in 1996, Numerix started as a pricing company before expanding into risk and financial technology, and has continued to focus on offerings designed to meet customer demand for consistent and comprehensive cross-asset analytics available in real time. Steve O'Hanlon, Chief Executive Officer of Numerix, says: "Numerix is truly known for its front-office capabilities. We know how to speak the language of the front office and how the front office communicates its requirements."

The Numerix Oneview Enterprise Platform provides customers with a single platform for pricing, risk, analysis and trade management, and the component-based system is designed to ensure consistency between data used for trading and risk. In the past, says James Jockle, Chief Marketing Officer at Numerix, systems were developed for specific use cases or roles and the result would often be a disconnect in the calculations. "We knew we had to ensure interoperability between personas, roles and functions," he says, highlighting that "for us, the differentiator is the interoperability" between the different modules in the platform.

In addition, there has been growing appetite for real-time risk management services in recent years, and Numerix has continued to accelerate along this path. In March 2017, Numerix acquired real-time risk and portfolio experts TFG Financial Systems, which had core real-time, distributed, event-driven processing capabilities benefiting Oneview. To service the front office, Oneview delivers real-time updates to positions, profit and loss and other risk metrics.

The rapid changes in financial services and broad range of business models have also resulted in flexibility frequently appearing at the top of financial institutions' shopping lists. To meet new requirements for customizations, Numerix moved to an open architecture, and the flexibility of the platform is now a key selling point. Oneview customers can create and tailor their views of underlying analytics. "This is really something that has been exciting over these past [few] years," says Jockle. "Through our focus on providing flexibility and extensibility, we have empowered individuals to see the world the way they want to see it."

Solutions: **Hedge Fund Risk Management**

Bloomberg

In a fiercely competitive environment, hedge funds are under increasing pressure to service the demands of investors and meet regulators' changing reporting requirements. Mitigating risk requires access to consistent and reliable data supporting the numbers in the reporting. The winner of the inaugural *RiskTech100* ® Hedge Fund Risk Management category is, unsurprisingly, data giant Bloomberg.

With a broad coverage of asset classes and an extensive pricing library, Bloomberg delivers data to hedge fund customers for managing risk in a consistent manner across the organization. Jose Ribas, Global Head of Risk and Pricing solutions at Bloomberg, says the extensive coverage and availability of all types of risk models is very important to hedge funds, where risk management teams may be smaller than on the sell-side.

As investors and regulators have put increased pressure on hedge funds to provide more frequent and detailed reporting, vendors have responded by upgrading services to meet new market demand in this space. Ribas says Bloomberg has invested a lot in application programming interfaces (APIs), which "have been growing and growing", with a focus on web services and intraday data requirements.

Product changes have resulted in customers now being able to call on numbers intraday and customize their own reports, which is particularly important in the cutthroat hedge fund industry, where funds might need to test new strategies and perform analysis on entering a new market or product area as well as justify changes to investors. With improved flexibility, hedge funds are better placed to meet requirements for increased transparency into strategies and investments. "I think it's important to understand customers also want flexibility to build their own solutions and build their own reports," he says.

(l–r) Robert Coen, Eugene Stern and Chintan Shah, Bloomberg

In addition to changes to reporting requirements, hedge funds have been indirectly affected by other regulations related to pricing. Ribas explains that hedge funds require tools for managing margin charges for derivatives, for example, as well as solutions for understanding valuation adjustment and counterparty risk charges, which also affect pricing.

Access to consistent data is essential for meeting all of the changing requirements, and Ribas says Bloomberg continues to focus on allowing customers to do "everything in one platform" and thus "keep improving integration internally". To effectively manage risk, there is a trend towards optimizing the workflow and ensuring each function is backed by the same pricing library. Ribas says the focus at Bloomberg is to continue delivering "more workflow, more scalability and more flexibility".

The system currently works as if the APIs are building blocks sitting behind an engine. By combining the blocks, Ribas says customers will have the components needed to quickly adapt to new regulations and future business needs.

Moody's Analytics

International Financial Reporting Standard (IFRS) 9 introduced a new accounting standard for financial instruments when it came into effect in January 2018. Taking first place for helping customers solve challenges around IFRS 9 is Moody's Analytics, winner of the inaugural *RiskTech100* ® IFRS 9 award.

Roshni Patel, Moody's Analytics

"The way Moody's Analytics approached IFRS 9, and particularly the impairments impact, made us stand out," says Roshni Patel, Director and Senior IFRS 9 Specialist at Moody's Analytics. She explains that Moody's Analytics has created and offered an off-the-shelf solution that can be adapted and targeted for all tiers and segments of financial institutions, from Tier 1 to Tier 3 start-up banks.

For impairment – a key challenge of IFRS 9 – Moody's Analytics provides a calculations model in its ImpairmentStudio solution, which also covers Current Expected Credit Loss impairment calculations. This is particularly important for regions and financial institutions that require dual reporting.

In general, firms have been able to combine elements of Moody's Analytics' offering with existing systems. Patel says that customers have the flexibility to not rely solely on the Moody's Analytics IFRS suite. If their infrastructure includes existing data, models or applications, these can be embedded into the Moody's Analytics IFRS 9 solution. For example, they can customize and input their own scenarios or leverage Moody's Analytics' parameters for bench-marking purposes.

As IFRS 9 is now in effect, industry focus has shifted to take projects to the next level. For those that started late and ended up with short-term solutions with manual workarounds, the projects this year have been geared towards transforming these tactile deployments into more automated solutions. In many cases, Moody's Analytics has seen emphasis on IFRS 9 validation frameworks and integration of IFRS 9 into business processes. Going forward, Patel says, it is about being able to use the same data across the business by linking IFRS 9 to integrated balance sheet management, origination and risk measurement, and "having a consistent platform where you have that one golden source of data".

As part of strategic work being undertaken in the market, firms are increasingly assessing the impact IFRS 9 will have on their overall business strategies. Pricing of new deals is set to be affected by the outcome of future IFRS 9 calculations. The front office is therefore obliged to get up to speed with changes that could impact deal assessments and subsequent impacts on provisions.

Patel says Moody's Analytics is helping clients understand credit earnings volatility of loan portfolios introduced by IFRS 9 and how to tame volatility from a risk management perspective. "The C-level has to be able to understand and justify what is causing the volatility," she says.

RiskTech 100 2019

Solutions: IFRS 17

FIS

As the insurance market prepares for an overhaul of accounting and reporting procedures, International Financial Reporting Standard (IFRS) 17 continues to drive projects in Europe and Asia. Due to come into effect from 2022, IFRS 17 is set to introduce increased disclosure requirements and fundamental changes to calculations. FIS, the winner of this year's inaugural *RiskTech100®* IFRS 17 award, is leading the race to help customers prepare.

"FIS started developing an IFRS 17 solution two years before the accounting standard was even finalized," says Martin Sarjeant, Head of Risk Solutions Management and Strategy for FIS' insurance business. "We had been following the International Accounting Standards Board's development of the standard to ensure we were in line with IFRS 17 when it was published in May 2017." As a result, the vendor issued its first product update just weeks after publication – and in the past year has introduced more changes that give clients an end-to-end solution for IFRS 17.

Additions to the offering include the introduction of templates and system updates to help clients meet the onerous disclosure requirements of IFRS 17. Specifically, these help manage the way IFRS 17 results change from one reporting period to the next, and support the transition of insurers' existing portfolios to the standard.

Another key update this year has been to the Prophet Data Management Platform, including updates to the Prophet Control Centre. The latter solution automates the business processes that support risk management, and has now been upgraded to deliver end-to-end automation of the IFRS 17 process. According to Sarjeant, this will increase governance throughout the IFRS 17 reporting process and not only reduce reporting times but also remove the risk of manual errors.

Sean Hayward (left) and Martin Sarjeant, FIS

At the same time, FIS has enhanced its Insurance Data Repository to help clients group data in line with IFRS 17 requirements. "Insurers are looking at the business in a much more granular way than they used to," says Sarjeant.

The deadline for IFRS 17 compliance was recently pushed back one year to 2022. Sarjeant believes insurers previously behind schedule can now catch up. "There are some countries that really haven't started to implement IFRS 17," he says, detailing how FIS' more out-of-the-box solution is helping clients move forward on their compliance journey.

FIS is also seeing more clients take its insurance risk platform as a managed cloud offering, utilizing the public cloud infrastructure of either Amazon or Microsoft, a trend partly driven by IFRS 17. As firms require more hardware to run IFRS 17 calculations, Sarjeant explains, the cloud offering becomes more appealing, since firms can then avoid paying for the infrastructure when not using those calculations. In addition, the cloud offers fast implementation times, while a managed cloud service allows multinationals in particular to handle compliance at a central level – and avoid local infrastructure and management costs.

Intellect Design

In today's heavily regulated market, the focus is narrowing on ensuring firms can optimize liquidity positions, as holding excess liquidity in an inefficient way can be costly for any organization. Given the strict regulatory requirement of holding liquidity, having a robust real-time liquidity risk system can become a competitive advantage as it can contribute substantially to the bottom line. The winner of the Liquidity Risk & ALM category is Intellect Design, which has been celebrated for its OneTREASURY suite.

Rajan Seshan, Intellect Design

With a background in treasury and asset-liability management (ALM), Intellect offers a comprehensive suite of treasury, liquidity risk and ALM solutions. The liquidity risk solution as part of the Intellect OneTREASURY suite is aimed at providing users with an in-depth understanding of the bank's liquidity risk and identifying any stresses that exist at any point in time. By providing cash projections with a required level of precision and identifying the most cost-effective funding option, the solution enables the treasurer's office to prevent liquidity squeezes and mitigate the risk of credit erosion, regulatory fines and reputational damage.

Ben Sumner, Senior Editor of Chartis, says: "Intellect's OneTREASURY solution covers a range of compliance requirements, offering sophisticated behavior modeling and risk sensitivity measures. The solution emerged from the Citi development environment, and its wide coverage and robust data aggregation capabilities reflect not only its firm institutional roots, but also Intellect's strong focus on developing comprehensive, integrated liquidity risk management offerings."

Intellect's ALM solution provides insight into the balance sheet, and provides users with an overview of intraday positions of nostro balances and real-time updates on liquidity to identify a potential liquidity squeeze. In addition, there are reporting tools in the application, which help firms fulfill regulatory reporting requirements.

Rajan Seshan, Business Head at Intellect OneTREASURY, says: "With our experience and expertise in treasury and ALM, we've been successful in developing a system for liquidity risk that is geared towards drilling down deeper." In fact, in terms of liquidity risk, the solution offers risk visualization across 64 dimensions of risk, and addresses liquidity risk management challenges by enabling a 360-degree swivel view and transaction-level drill downs.

Intellect's enriched offering in ALM Treasury helps to continually monitor and optimize liquidity and interest rate exposure over future time horizons. "A couple of years back, risk analytics were frequently done on a T+1 basis, but there is now a move towards pre-trade analytics to enable treasurers to gain insight into risk before taking a new position," says Seshan, adding that going forward the market can also expect to see further enhancements in terms of real-time liquidity risk management from Intellect.

Solutions: Market Risk

FIS

While market risk has traditionally been managed by individual asset owners, there is now a move towards aggregating risk enterprise-wide. Having a system that aggregates risk across asset classes can be hugely powerful – especially for trading management, which could gain a better overview of the actual impact of the aggregated book. The winner of the *RiskTech100®* Market Risk award is a vendor that has focused on meeting these changing market needs – FIS.

(l–r) Rob Stubbs; Josie Palazzolo, FIS; and Laura Galante

As the market has seen growing recognition of the need for the front office to take ownership of risk, the requirements for integration across the front-to-back office is changing and there is a growing need for timely information to suit the nature of front-office operations. Sven Ludwig, Managing Director, Global Head of Subject Matter Experts and Advisory at FIS, says the front office is shaping the agenda, as users require instant results and systems require more in-memory aggregation to handle higher volumes. "We see overall risk becoming more front-office centered, and those needs and key processes need to include flexible aggregation and data optimization," he says.

In response to changing market requirements, FIS has decomposed the solution into a collection of micro services. " This allows us to adapt to varying requirements across departments while leveraging identical microservices and even infrastructure to reduce total cost of ownership," says Ludwig.

Recent enhancements to FIS Market Risk also follow the same front-office theme, and include the reimagined calculations framework, which has been rebuilt into a set of decomposed calculation stages streaming results from one to the next. From a technology perspective, the speed of processing and the volume the platform can handle stand out, and this year it has been about the combination of the new FIS in-memory aggregation and Hadoop big data technology, which allows organizations to hold previously unimaginable quantities of granular data and interrogate it to provide new insights to users.

FIS has also applied the quantitative and machine learning capabilities of the organization to the risk domain to deliver enhanced analysis and dashboards, which makes risk easier rather than more complex. FIS' Dan Travers says leveraging machine learning will continue to be a theme, with one focus area being how machine learning can be used to identify risks that would be less obvious to a human user.

On the buy-side, FIS' Adrian Holt says the expectation is that the move to improved integration will continue. "We will continue to market our solution as stand-alone and best-of-breed, but we're increasingly integrating our solutions. We can deliver a complete investment management platform that incorporates our market risk solution," he says, explaining this is now what customers are asking for to enable an integrated approach to risk management.

Solutions: Model Validation

Moody's Analytics

In the past decade, changing capital adequacy requirements have resulted in an increasing spotlight on models for measuring credit exposures. Firms with proven models will build trust with regulators and can optimize capital in a more efficient way, making model validation essential for protecting the bottom line. The vendor with a proven track record in the credit risk category – Moody's Analytics – was crowned winner of the inaugural award for Model Validation.


Ed Young, Moody's Analytics

The Moody's Analytics RiskCalc offering features a global suite of models for evaluating commercial and industrial credit risk. RiskCalc includes more than 35 validated region- and industry-specific models created using the Moody's Analytics Data Alliance Database, which contains over 85 million financial statements on more than 17 million borrowers. Ed Young, Senior Director, Moody's Analytics, says RiskCalc has a global presence and is now used by more than 550 customers.

With models that undergo extensive validation and are supported by documentation, firms can be better positioned to improve capital management, perform stress testing and comply with regulation and accounting standards. Accounting standards, in particular, are today driving a growing focus on validation as deadlines fast approach for firms to address validation procedures for models calculating expected credit losses. "The CECL [Current Expected Credit Loss] accounting standard is right on the heels of IFRS 9, and there's an ever-increasing demand for validating credit risk models and ongoing monitoring," says Young.

In response to the growing need for validation, the latest Moody's Analytics problem-solving solution, CAP, will soon add an app to monitor model performance. The app provides direct insight into the company's years of modelling expertise as well as the model validation process. "We have what we feel will be a transformational tool that improves benchmarking and ongoing monitoring," says Young. The new app will leverage RiskCalc, which is already used in-house at Moody's Analytics to help firms customize risk calculations on the fly. Customers will be able to use the app to compare their modelling results to the industry standard RiskCalc modelling results.

"We've been able to benchmark monitoring for a while, but recent enhancements significantly improve efficiency," Young says, explaining that the upcoming release fits with the overall team vision of helping customers automate processes to reduce time spent on operational tasks and documentation.

Another focus area has been customization of models using robust datasets and cutting-edge analytics, and Young comments that institutions are seeking a tailored credit risk solution that fits their risk profile. To further enhance capabilities, Moody's Analytics will be looking to leverage the 2017 acquisition of information provider Bureau van Dijk, which has extensive coverage of private company datasets that can be relevant for further enhancing models.

BearingPoint

As firms continue to see transformative changes brought on by regulation, regulatory technology – known as RegTech – has become increasingly important in the risk management space, and has for the first time been introduced as a separate category in the rankings. The winner of the first *RiskTech100®* RegTech award is BearingPoint, which has also this year climbed into the top 30 of the overall *RiskTech100®*.

BearingPoint RegTech provides financial services firms with regulatory and risk technology solutions and reporting services, and BearingPoint's Abacus – which dates back to 1993 – is an end-to-end reporting system for risk, regulatory, prudential and statistical reporting. Jürgen Lux, Chief Executive Officer of RegTech, says BearingPoint's success in the awards this year follows the improvements made to the full-service offering, and the continued strong growth. "We have been growing at double-digit rates for years," he says, adding that the focus of the growth strategy remains on internationalization, new distribution channels and investments in research and development, people and the organization.

In 2017, BearingPoint launched Abacus360, a new generation of Abacus that integrates comprehensive functionality for reporting, risk calculations and controlling regulatory key performance indicators into a high-performance modularized platform. The different modules cover specific requirements of the Single Resolution Board, the European Banking Authority and the European Central Bank, as well as the national supervisory authorities. "The time-to-market for the implementation of new regulatory requirements was one of the major criteria for the development of the new platform," says Bodo Windmöller, Chief Product Officer of RegTech at BearingPoint, highlighting

(l–r) Rob Stubbs; Ulrich Le, BearingPoint; and Laura Galante

that the new technology enables users to quickly respond to even very short-term requirements, such as ad hoc requests and fire drills.

In recent years, BearingPoint has also expanded its risk/regulation-as-a-service unit and recently formed a partnership with IBM Services for business process outsourcing in regulatory reporting. Windmöller says the range of services BearingPoint now offers covers all aspects of the operation of a solution for risk management and regulatory reporting, and firms can leverage BearingPoint for traditional business process outsourcing or as an application service provider in this area. "We see a clear trend towards business process outsourcing. Due to the constantly growing cost pressure, more and more financial institutions are deciding to outsource their reporting processes," he says.

BearingPoint continues to innovate to help firms optimize operations and reduce the rising costs of regulation. Windmöller says BearingPoint will carry on evaluating new technologies with regard to their usability for risk data aggregation and reporting, and a recent focus area has been exploring the potential benefits of blockchain for RegTech. "There are many use cases and possibilities for using blockchain solutions in the RegTech area," he says.

MetricStream

As compliance breaches continue to make headlines and cost financial institutions billions of dollars in fines, it is not surprising technology vendors are experiencing increasing demand for operational risk, and governance, risk and compliance (GRC) systems. Leading the race to deliver these to financial institutions is MetricStream.

In 2017 MetricStream released its cloud-based fourth-generation GRC platform, M7, which is designed to help companies preserve corporate integrity, protect their brands and drive business performance in a market increasingly characterized by a need for improved integration and faster risk mitigation. Following its launch, MetricStream focused on accelerating opportunities for customers to leverage risk assessments to drive performance and respond to changing requirements deriving from an increased need to address cyber security and more complex global regulatory requirements.

Gaurav Kapoor, Chief Operating Officer at MetricStream, says risk has traditionally been for specialists, but the trend for customers to increasingly link risk management to performance has allowed MetricStream to stand out in both the operational risk and GRC space. To bring the front line into risk management procedures, MetricStream has focused on software usability, which is critical for casual users on the front line. As a consequence of this work, Kapoor says, a bank in the UK now has 40,000 employees using the MetricStream system. "If you can start to capture what's happening on the front line it becomes a bottom-up approach [to risk]," he says.

In addition, MetricStream has focused on enhancing its integration layer, which has resulted in users being able to analyze more internal data sources that could signal a risk event. Kapoor highlights that events happening in isolation may not constitute a threat to the business, but there are often instances where businesses should have known about risks because data simply needs to be tied together to create a better picture of risks across the enterprise.

Ryan Rodriguez-Wiggins, MetricStream

Over the next few years, the big push will be on applying a layer of artificial intelligence (AI) and machine learning for analytics. One of the use cases MetricStream is looking at is reducing the need for traditional manual audits that look at a larger sample of data by enabling ongoing risk assessments and control monitoring continuously.

Another area in which MetricStream is looking to apply AI is linking knowledge from across the enterprise. "If you have an issue in one part of the world, another part of the world may already have solved it," explains Kapoor, who adds that with the use of AI, the system could start looking at the patterns and automated remediation recommendations to help solve problems faster and avoid duplicating efforts.

Numerix

Attaching the right value to an instrument continues to be a much-discussed topic as regulators have pushed for increased transparency, and firms require more flexibility to review underlying data sources and models. *RiskTech100* ® introduced the Pricing & Valuation category in 2017 and, after the vendor's topping the leaderboard for three consecutive years now, it is clear Numerix is still the one to beat in pricing and valuation.

Steve O'Hanlon, Chief Executive Officer, says pricing and valuation is where it all started for Numerix: "This is what we pioneered, and we were the first to do multi-asset class valuation."

To remain at the top, Numerix continues to innovate and extend its multi-asset class coverage and introduce new pricing models. "We never rest on our laurels," says O'Hanlon, who is full of pride in his staff, who combined hold nearly 100 postgraduate doctoral degrees.

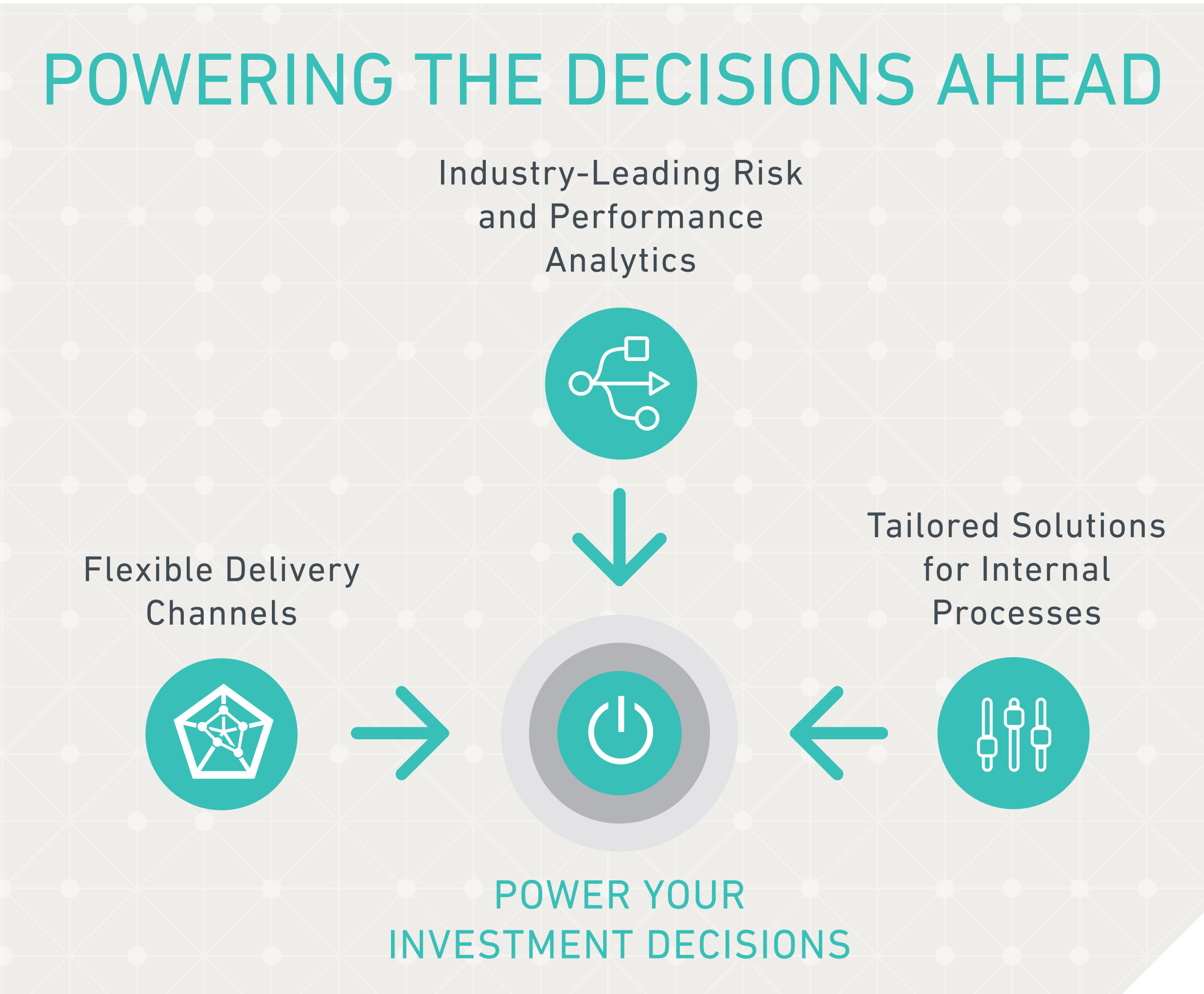
With its vast experience and skilled team, Numerix can be on the money when it comes to new developments. Recently, those developments have been partly centered on responding quickly to customer needs for alternative reference rates. James Jockle, Chief Marketing Officer at Numerix, says: "The move away from Libor is creating significant interest in other reference rates." At the end of this year, customers will see more pricing features and multiple new references in Oneview, and Jockle says "as institutions are reviewing their entire curve infrastructure, we're standing out as a leader."

Following challenges in the bond market and tight margins in equities, structured products are increasingly entering the limelight and also growing as a focus area for the pricing specialist. "We're seeing new interest in structured products as investors are looking to improve yield and diversity in their portfolios," says Jockle, adding that Numerix is responding to this trend by providing risk management and pricing around structured products.

Daniel Schobel (left) and Ping Sun, Numerix

While all of this is happening in the market, regulators are lurking in the background, putting pressure on firms to ensure calculations are based on accurate data and well-documented models. The data management burden is increasing, and firms are trying to delve into underlying data to comply with regulation. "What's being uncovered is that they don't have [the information]," says O'Hanlon, who suggests the market will see significant changes in the future: "I predict that, over the next five years, you're going to see more banks that need to move to an external pricing and risk library because they can't maintain pricing [in-house]. Numerix will be the company that picks up those opportunities."

MSCI ANALYTICS HELP BUY-SIDE FIRMS MAKE BETTER DECISIONS THROUGH CONTINUOUS INNOVATION.



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Solutions: Risk as a Service (RaaS)

MSCI

While SaaS – or software as a service – is commonly used in many areas of financial services, there is now a much newer, more thriving initialism in play: RaaS – or risk as a service. RaaS has increased in popularity following pressure on firms to get on top of risk coupled with a desire to keep infrastructure costs down. Taking RaaS offers firms the opportunity to avoid high up-front costs and lengthy implementations, and winning the first *RiskTech100* ® award for RaaS is buy-side expert MSCI, which has recently expanded its offerings in operational support, data management and professional services.

The appetite for alternative delivery models has increased on the buy-side, as firms have been faced with tightening margins and a need to optimize efficiencies. In response to the trend, MSCI has made significant investments in the past two years building out an RaaS offering, which is now supported by a 200-strong team focusing purely on enterprise solutions and services.

Mohan Verma, Head of Solutions for MSCI Analytics, says, since late last year, MSCI has organized the team and introduced a suite of services, which now spans operational support, data management and professional services. "When it comes to risk, performance and compliance, our clients are looking for someone to help them optimize and manage the operations," he says, explaining that, from a support perspective, MSCI now covers, for example, analytics validation and rejected asset remediation: "Clients are more and more outsourcing their operational activities."

To help firms improve data management, which is essential for risk, performance and compliance needs, MSCI has built a client data management system (CDMS).

(l–r) Rob Stubbs; Pam Haller, MSCI; and Laura Galante

The CDMS allows MSCI to collect, cleanse, normalize, store and visualize data for clients. This system can also store analytical results and can be fed into any MSCI application or client-side applications.

The professional services offering has grown out of clients' need for MSCI to provide additional resources that complement their operations with additional expertise. "Clients do not have the resources to perform certain operational or reporting tasks and they will ask us to take on projects [for them instead]," he says, adding that this could, for example, be a case of running various analytics to be presented to the board.

In addition to providing operational support, MSCI plans to allow buy-side customers to soon be able to leverage its platforms for internal processes. "We are looking to make our research platform and market data available to clients," says Verma, and "our goal is to enable clients to leverage our environment to build and backtest their own models."

Solutions: Risk & Finance Integration

Oracle

As regulators have been putting increased pressure on firms to ensure data consistency, market participants have been forced to strengthen integration between risk and finance. Regulatory reporting obligations mean firms are pulling numbers from a multitude of applications, and inconsistencies are introducing operational and regulatory risk. Leading the race to offer customers an integrated suite of risk and finance solutions is Oracle, the first vendor to be named winner of the newly introduced *RiskTech100*® Risk & Finance Integration category.

(l–r) Bhargava Srinivasa, Yogendra Singh and Ambreesh Khanna, Oracle

The award reflects Oracle's success in providing a holistic suite of banking applications built on a common platform as long as 10 years ago, and now delivering clients an out-of-the-box product set for risk and finance.

Ambreesh Khanna, Group Vice-President and General Manager of Oracle Financial Services Analytical Applications, says risk and finance integration is critical and the Oracle offering allows customers to build connections between applications. "We firmly believe we have a near-turnkey solution for fully integrated risk, finance and accounting," he says, explaining that Oracle has a rich history in offering an integrated suite for these areas, adding that "maintaining and making this integration even tighter is a big thing".

A lack of connections between risk and finance applications leads to firms risking inconsistencies in statutory and regulatory reporting. "The numbers in statutory reports should match the numbers you report to the regulators, and internally all the planning that banks do should use those same numbers," says Khanna.

The increasing focus on this issue at a global level has resulted in new wins for Oracle, with three recent new customers selecting Oracle for risk and finance integration in South-East Asia. "The trend I'm seeing is that every bank, irrespective of geography, requires this capability. It is just a question of how expensive it is to integrate," says Khanna, explaining that, at first, there was a wave of large banks tackling risk and finance integration, and it is now the firms with $50–60 billion in assets that are ready to make a move.

To make technology accessible to smaller banks, the next step for Oracle will be moving to the cloud. "I predict adoption will be easier for the [smaller] banks if Oracle can offer [risk and finance integration] in the cloud and out of the box," Khanna says.

In addition, Oracle is integrating artificial intelligence (AI) into the applications, and one area that could benefit from this would be customer behavior analysis in relation to prepayments. "We're building AI into the asset-liability management application to predict prepayment based on historical data," he says.

Solutions: Risk Data Aggregation & Reporting

Oracle

Data is the backbone of any risk management application, and the ability to succeed with data aggregation and reporting is essential in today's heavily regulated market. The complex challenges facing firms to meet changing requirements mean technology is often taking center stage, and systems that allow for flexible and extensible data models can transform any risk and compliance function. For the second consecutive year, Oracle has been recognized for its success in this area, winning the *RiskTech100®* Risk Data Aggregation & Reporting category for its long-standing work in managing risk data.

(l–r) Bhargava Srinivasa, Mike Fionda and Ambreesh Khanna, Oracle

Oracle Financial Services Analytical Applications' (OFSAA's) holistic suite benefits from an extensible data model with full lineage and drill-down capabilities. Ambreesh Khanna, Group Vice-President and General Manager of OFSAA, says data has also continued to be a focus area for Oracle, with the past year seeing the vendor release data management tools and initiatives. New for 2018 is its Data Governance Studio, which can help customers gain confidence in data and thus support the journey to compliance with the Basel Committee on Banking Supervision's principles for effective risk data aggregation and reporting (BCBS 239). Khanna explains that the data principles set out under BCBS 239 for managing risk and finance data would be good practice to follow for any bank, and the regulation has helped push data management up the agenda.

Oracle has also this year formalized its strategy, promising customers continuous compliance. The initiative is set to give customers reassurance that Oracle is committed to responding to regulatory changes and will carry on assisting users by making any necessary regulatory product upgrades. For Oracle, this focus on meeting customer compliance needs has long been discussed, but this is the first time it has been published on the company website, says Khanna.

One of the main challenges for firms in terms of compliance has been changing reporting requirements, and Oracle is also in the process of expanding its jurisdictional coverage for regulatory reporting. Previously, Oracle focused on the US and India markets, and this year coverage has been expanded to Europe. By the end of December, Australia will be added, followed by Singapore in 2019.

Going forward, the broader OFSAA initiatives for moving applications onto the cloud, incorporating big data and leveraging artificial intelligence will also benefit risk data aggregation and reporting. "We're looking to use machine learning capabilities to ease the burden of sourcing the data into the repository," says Khanna, adding that another plan is to utilize fuzzy matching capabilities to allow users to predict with a level of confidence that the data is exactly what they want to source: "We realize that sourcing of data is probably the number-one problem for banks."

Wolters Kluwer

With a relentless wave of regulation and ever-increasing reporting requirements, firms are aiming to centralize and streamline reporting processes to manage risk and avoid rocketing operational costs. With integrated regulatory compliance and reporting solutions, Wolters Kluwer has won the award for *RiskTech100®* Regulatory Reporting for the seventh time in eight years.

Wolters Kluwer's OneSumX for regulatory reporting enables financial institutions to address global, complex regulatory data requirements stipulated by regulatory bodies and central banks, among other authorities, as well as for internal management reporting purposes. OneSumX uses a single source of data to ensure consistency, reconciliation and accuracy and includes the firm's Regulatory Update Service. "This unique service is maintained by Wolters Kluwer experts who actively monitor regulation in approximately 30 countries," says Claudio Salinardi, Executive Vice-President and General Manager at Wolters Kluwer's finance, risk and reporting business.

As regulatory requirements continue to change, Wolters Kluwer is enhancing capabilities and helping firms comply with regulation. One of the recent additions to OneSumX is the release of the integrated, scalable AnaCredit solution, which has been designed specifically to handle the large volumes and deliver the granular credit and counterparty information required by the European Central Bank. "AnaCredit's powerful data analysis tools aggregate data intelligently, highlight period-on-period movements, and comply with local regulators' technical standards," he says.

In general, Salinardi says conversations with clients have highlighted the number of challenges facing the industry, including

(l–r) Bill Collette, Todd Lawrence and Doug Sidnam, Wolters Kluwer

unpredictable and excessive regulatory cost pressure; disparate, difficult to reconcile datasets; and a resulting desire to process large volumes of data faster. "To help with these challenges, Wolters Kluwer is able to provide an integrated architecture that allows firms to address their finance, risk and reporting obligations in a holistic manner. Integration should help firms develop regulatory compliance and reporting solutions that answer the need for increased data granularity and transparent data lineage," he says.

Part of the ongoing challenge for firms is the reliance on outdated systems and lack of centralization, which is hindering the ability to adapt to new regulation and ensure consistency in reporting. The sheer number of reporting requirements and the need to report the same numbers in different reports has led to an emerging focus on regulatory data management to improve efficiencies and reduce duplication. "The evolution of regulations has left banks with various bespoke databases across five core functions: credit, treasury, profitability analytics, financial reporting and regulatory reporting, with the same data appearing and processed in multiple places," says Salinardi.

Solutions: Trade Surveillance

Nasdaq

As regulators continue to clamp down on surveillance, it is critical firms ensure procedures are in place for monitoring trading activities. Leading the race in this space is Nasdaq, which came out top in the Trade Surveillance category.

(l–r) Josh Phillips, Sepehr Irandoost, Scott Hallas and Stephen Cooper, Nasdaq

Valerie Bannert-Thurner, Head of Risk and Surveillance Solutions at Nasdaq, says the firm stands out in the trade surveillance space for servicing all areas of capital markets, ranging from regulators and exchanges to sell- and buy-side firms.

Nasdaq's SMARTS Trade Surveillance offering provides customers with cross-asset and cross-market surveillance, and automates detection, investigation and analysis of potentially abusive or disorderly trading for sell-side firms. It has continued to expand to meet changing requirements with improvements to the detection algorithm, more contextual information and enhanced opportunities for firms to fine-tune processes to meet specific business needs.

In the past, surveillance teams have typically looked for alerts and then launched investigations. To offer firms an opportunity to detect misbehavior earlier, Nasdaq introduced Lens, a discovery tool built within the SMARTS Trade Surveillance platform that allows firms to use the 'follow-the-money' approach to quickly identify outliers and better understand trading behaviors and patterns. Using Lens, clients can identify outliers – for example, "someone who gets excessively lucky all the time," says Bannert-Thurner.

Another capability added to SMARTS is Depth, launched in 2017, which provides clients with a visualization tool for order book manipulation. "This is an entirely new way to visualize manipulation of the order book," she says, highlighting how users can identify specific behaviors based on their unique trading 'fingerprint.'

While SMARTS Trade Surveillance is mainly for sell-side firms, Nasdaq has also been building out services on the buy-side, and Nasdaq Buy-Side Compliance provides asset managers and hedge funds with behavioral algorithms for buy-side trade monitoring. "While the mandate has been in place for a while for buy-side firms to adopt appropriate levels of surveillance, we have recently seen them start to be more proactive in their approach," says Bannert-Thurner.

To see what peers are doing across the market, Nasdaq has also started to provide peer group benchmarks. "Through comparisons, statistics and risk profiles created based on unique peer groups, we are able to help clients better adjust parameters and jointly advance the protection of the entire segment," she says.

For 2019, key product developments will be centered around advancing machine intelligence capabilities and more sophistication in the manipulation of correlated securities.

Solutions: xVA

Numerix

Following regulatory demand for enhanced risk management procedures and improved pricing capabilities, valuation adjustments – collectively referred to as xVAs – have become increasingly important in fixed income. This has brought about the introduction of the xVA category in *RiskTech100* ® in 2017 and, for a second consecutive year, Numerix has been named the winner of the *RiskTech100* ® xVA award, underlining the vendor's extensive capabilities in the valuation space.


(l–r) Rob Stubbs; Andrew McClelland and Emily Jean-Pierre, Numerix; and Laura Galante

Numerix started out as a pricing company in 1996 and was an early pioneer of multi-asset class pricing. It built out pricing capabilities for the front office and combined them with market risk capabilities after the company's experience valuing Lehman Brothers' derivatives book following its 2008 bankruptcy. With this extensive experience in the pricing space, the vendor has continued to respond to new trends, including helping customers with xVAs in relation to derivatives instruments as this area has grown in importance.

"The most impressive thing that happened this year is that adoption rate of xVA clients went through the roof, and I expect we'll see a doubling of that next year," says Numerix Chief Executive Officer Steve O'Hanlon.

As regulation is driving a need for an expanding set of xVAs, Numerix has continued to conduct research and introduce new models. According to O'Hanlon, Numerix has "the most celebrated quantitative innovators in the industry", and Numerix's front-to-risk platform Oneview "is the hottest ticket in the marketplace".

In developments relating to xVA, margin valuation adjustment (MVA) has been a focus area in recent times, as more firms are required to comply with the Basel Committee on Banking Supervision and the International Organization of Securities Commissions' margin requirements. "What we're doing is groundbreaking. We've pioneered this space and delivered MVA to the market first," says O'Hanlon, who adds that firms need a real-time system to produce the results required by chief risk officers and desks, and it is challenging for sell-side and buy-side firms to keep up with the changes without the assistance of a vendor such as Numerix.

This is not the market to be in for anyone planning to slow their pace. Changes keep coming fast, and risk-adjusted pricing is one of the next topics on the agenda. James Jockle, Chief Marketing Officer at Numerix, says the next question will be how firms can communicate risk-adjusted prices downstream. The first area of focus in the xVA space was servicing the xVA desks themselves, he explains, and the second will be taking the results to other front-office users who could benefit from the same data.

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