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RISK TECHNOLOGY RANKINGS 2008

In unprecedented market conditions, Murex retained its top position in Risk*'s 2008 technology rankings. However, Thomson Reuters and Algorithmics are close behind, demonstrating that, despite the financial crisis, competition among software vendors remains as fierce as ever. By* ***Clive Davidson****, with research by* ***Xiao-Long Chen***

Tight at the **top**

The past 18 months has proved to be the ultimate stress test for many aspects of financial services, including the technology used to price, trade and risk-manage derivatives transactions. Many of the postmortems into the causes of the crisis have pointed to an overreliance on models by banks and a failure to rigorously question the inputs entered into them. However, the number of responses in this year's *Risk* technology rankings – the highest ever at 2,655 – suggests a vote of confidence for software vendors by their clients. In fact, anecdotal evidence suggests that while markets were going to pieces around them, many financial institutions found their systems held together, often in the face of vastly increased processing and analytical demands.

In these testing conditions, Paris-based Murex held on to its number one position as the leading derivatives trading and risk systems vendor, while Algorithmics maintained its lead in enterprise risk management.

Making the biggest gains in this year's survey is Thomson Reuters, which climbed to second from last year's eighth place. The New York-based vendor has made major investments in its product suite over the past three years – and this now appears to being paying off, with the firm scoring well across the pricing, trading and risk categories.

Like Thomson Reuters, Pennsylvania-based SunGard has a broad portfolio of systems, and strong voting for its offerings across many categories resulted in it retaining fourth position overall. California-based Calypso Technology performed particularly well in the trading categories and has made an incremental gain from sixth to fifth position overall, while Paris-based enterprise risk specialist Fermat, with its highly regarded Basel II application, climbed three places to seventh.

New York-based Savvysoft slipped from third to sixth place, but this is still an outstanding achievement for a company that is something of a David among Goliaths in terms of size and resources. Other high-flyers include: Paris-based Sophis, which maintained its pole position in equities, winning both the pricing and analytics and front- to back-office trading categories in this asset class; New York-based Bloomberg, which won the data vendor segment; and North Carolina-based SAS, which performed strongly in operational risk management.

Maroun Edde, chief executive of Murex, says the financial crisis has thrown up a number of major challenges to trading and risk. "During the heat of various crisis days, reliability was key," he notes. Some asset classes saw record volumes on the back of unexpected events – for instance, in the credit derivatives market following a slew of credit events in September, including Fannie Mae and Freddie Mac, Lehman Brothers and Washington Mutual. That meant there was no room for the failure of any component of a system.

Another challenge was the need to rapidly produce high-quality risk figures

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>
> Andrew White, Thomson Reuters

across multiple asset classes, despite the difficult market conditions. "During the crisis period, markets moved so fast that traders could not rely any more on back-of-the-envelope calculations, especially for non-linear books," says Edde.

The challenges at the enterprise risk management (ERM) level were similar, notes Michael Zerbs, president and chief operating officer of Algorithmics, which topped the enterprise market risk management, risk capital calculation, collateral management and operational risk categories. In the face of extreme market volatility, banks began moving away from end-of-day batch risk processing towards intra-day measurement and management of positions, says Zerbs: "In a world where equity markets can go up or down 10% in a day, the assumptions made the previous night are not necessarily valid the next morning. Institutions need the ability at an enterprise level to go in and recalculate and test different assumptions."

This requires enormous computational power – something Algorithmics and its rivals have invested heavily in over the past few years. "Algorithmics and the industry as a whole have made tremendous progress towards accelerating the speed of calculations. It is now realistic to assess a global trading portfolio with a realistic mix of products over many scenarios in under an hour," says Zerbs. Algorithmics has benchmarked its system by simulating 1 million positions over 5,000 scenarios with 125 time steps in less than one hour on an eight-processor machine running the Linux operating system. "This is dramatically different from just a few years ago, and is what our clients have been demanding," adds Zerbs.

The volatile trading environment exposed many failings in risk management, controls and management processes. Several reports into the causes of the turmoil, including one by the Senior Supervisors Group in March, made a distinction between those firms that employed a comprehensive approach to viewing firm-wide exposures and those that split their risk management by business line, noting the former generally weathered the storm better.

David Rowe, executive vice-president for risk management at SunGard, believes the crisis has hammered home once and for all the dangers of taking a silo approach to risk management. "Ultimately, risk is enterprise-wide in nature. If it is a counterparty risk, it requires that you capture the full shape of your relationship with the counterparty," he says. Those institutions that implemented simulation-based systems that allowed them to calculate consolidated global limits across the firm were in a much better position to judge where their risks were, as well as identify the trades that might reduce their exposures, Rowe adds.

Software vendors are constantly trying to evolve to meet new market conditions and the demands of their client. However, the ability of vendor systems to meet the challenges posed by the financial crisis has less to do with recent innovation, and more to do with the rigorous testing of technology over an extended period, continues Rowe.

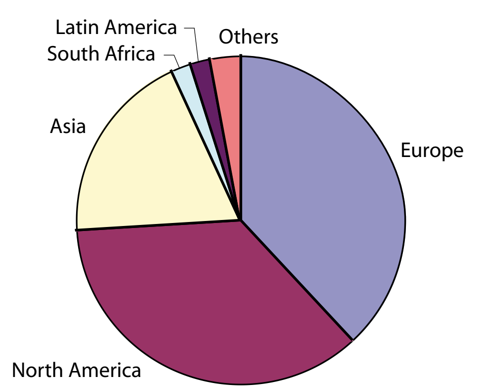
"Our systems have held up in some pretty stressful circumstances," he says. "This is the result of a long and careful process on our part and on the part of our clients in building and enhancing environments, and in our building working relationships with clients across their organisations. There is no one thing that made it all work – rather, it is the overall infrastructure and reliability of the systems that has been key."

Another consequence of the troubles in financial markets has been a greater focus by firms on analytics. In particular, companies have been keen to get their hands on pricing tools for complex, illiquid products such as collateralised debt obligations (CDOs). Before the crisis, investors had been overly reliant on external assessments from rating agencies, while many had used market quotes from dealers or third-party pricing services to value their holdings. The evaporation of liquidity in the structured credit market, however, has forced firms to develop their own pricing and analytics tools.

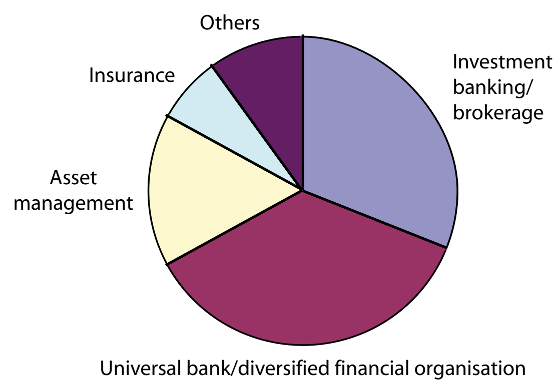
"We've been asked by many clients for help in valuing illiquid securities, including complex CDOs and auction rate securities," says Rich Tanenbaum, president of Savvysoft, which topped the pricing and analytics categories for rates and cross-asset products. The company also saw strong demand for its CorporateDefaults service, which provides daily market-implied default probabilities for corporate issuers. "There has been a desire in the market for unbiased default probabilities or default measures that do not rely on the opinions of rating agencies and are not based on unreliable accounting data," he adds.

Meanwhile, there has been further consolidation in the technology sector over the past year, particularly in risk management. In August, Brussels-based regulatory reporting technology vendor FRSGlobal acquired Zurich-based enterprise risk management specialist Iris Integrated Risk Management. Then, New York-based Moody's acquired Fermat in October (the acquisition took place after voting had begun for the rankings, hence the companies appear separately). Also in October, SunGard completed the acquisition of Paris-based GL

Survey respondents by location



Survey respondents by type of institution



Trade, a trading and investment system vendor with a range of applications and 1,400 staff.

The dislocation in the financial markets is likely to accelerate this consolidation, reckon vendors. "The market will consolidate further as the emerging winners pick off older business units of the previous generation of players in order to buy market share, or purchase quite small firms to extend their own offerings," says Michael Hall, head of business development at Fermat.

Already, banks prefer to deal with vendors they perceive to be most stable, and are applying a greater degree of scrutiny to software firms before adopting their offerings. "Banks are applying greater due diligence to their selection of vendors, and the issue of vendor stability is far more critical," says Andrew White, global head of risk management at Thomson Reuters. In the current climate, institutions are looking for tried-and-tested technology from large, financially sound vendors, he adds. *Risk*'s survey appears to bear this out. Only two companies – London-based data vendor Markit and operational risk management specialist Chase Cooper – are younger than 10 years old.

Clients – and particularly those in emerging markets – also now favour vendors that can offer a breadth of functionality, including analytics, trading, risk management, limit checking, collateral management and data management, says White. Acquiring a range of applications from a single vendor can simplify integration efforts (often a time-consuming and expensive process for institutions), as well as simplify maintenance and support. "Factors such as the breadth of technology, the total cost of ownership and the financial strength of the vendor are accelerated by the financial crisis," he adds.

Misys, SunGard and Thomson Reuters offer the broadest range of applications, although trading systems specialists such as Murex and Calypso offer an increasingly broad suite of functionality. "The recent liquidity and credit crisis has highlighted a need for a risk management framework that is linked to capital adequacy, collateral management, limits and counterparty risk exposure," says Gerard Rafie, vice-president, sales and marketing, at Calypso, which topped the front- to back-office trading systems categories for credit and structured products. "Our vision is to provide a single risk management framework that will enable trading desks to share analysis with risk management, accounting and operations groups."

One of the advantages that established, financially sound vendors have is the ability to invest in research and development (R&D) – and some believe the crisis has made this even more important than before. "Being able to continue with significant investment in R&D to respond to the new and numerous requirements that will emerge after the financial crisis will be key next year, and certainly more than it has been in previous years," says Mawheb Amami, product executive at Sophis. Around 40% of the firm's staff is engaged in R&D, claims Amami.

The key question is whether the financial crisis and the billions of dollars in losses will cause banks to slash their technology budgets in the coming year.

> "A lesson learnt from the current crisis is that we have to be more imaginative, creative and aggressive in our design of stress tests"
>
> Michael Zerbs, Algorithmics

Vendors expect some cutbacks, but argue risk-related projects are likely to remain untouched. Some could even see increases as banks look to plug holes exposed by the recent market stresses.

"We see an increased number of requests for systems for improving end-to-end automation of trading and enforcing real-time controls, and for refined or even fundamentally revisited risk measures," notes Murex's Edde. "This applies to business-level risk, as well as enterprise-level risk. It is about better metrics, better collateralisation processes and better and faster limits control processes."

The crisis has revealed severe shortcomings in risk processes and controls at many banks. If senior management does not address these failings, they will have regulators breathing down their necks, argue vendors. "We expect some regulators to intensify their implementation of Pillar II of Basel II. We also expect quite a few banks to review their risk architectures and replace some of their Basel II systems implemented over the period 2003–05," says Fermat's Hall.

Savvysoft's Tanenbaum agrees: "The market for risk management is always best after a crisis, when people realise markets can in fact go down. Firms re-evaluate their existing risk systems and measurements and conduct searches for the most technologically advanced risk systems the market has to offer. As such, we believe there will be increased spending on risk management over the coming year."

With some analysts predicting the worst of the crisis is now over, attention is turning to lessons that should be learned. One area of focus is the depth and quality of data used for pricing and risk analysis. SunGard's Rowe characterises the problems that have arisen in this area as "statistical entropy".

"You can never squeeze information out of data that is not there in the beginning," he says. "Five hundred pages of fancy analytics are not going to give you a confident assessment of how much subordination you need in a subprime mortgage CDO to give it a AAA rating if the information is not in the data in the first place."

Others argue some banks have become bogged down by quantitative analysis, sometimes neglecting to look at the bigger picture and employ qualitative stress tests. This is something regulators have seized on. "It is a human tendency to stay within your comfort zone and to explain even better what you know already rather than truly exploring the unknown," says Algorithmics' Zerbs. "A lesson learnt from the current crisis is that we have to be more imaginative, creative and aggressive in our design of stress tests because the past year has shown assumptions don't always hold and can be broken in dramatic ways."

This year's survey suggests the leading systems held up under pressure of the crisis where reliability, performance and the ability to scale up to meet new demands were crucial. Government and regulator responses to the turmoil indicate 2009 will present a very different landscape, where flexibility and the ability to react quickly to evolving requirements may be more important. This will produce new challenges for vendors – it will be interesting to see how they respond.

OVERALL

Rank	Vendors	1st places	2nd places	3rd places
1	Murex	5	8	2
2	Thomson Reuters	4	5	2
3	Algorithmics	4	5	1
4	SunGard	3	3	6
5	Calypso	2	2	6
6	Savvysoft	2	1	1
7	Fermat	2	1	
8	Sophis	2		
9=	Bloomberg	1		1
9=	SAS	1		1
11=	Numerix	1		
11=	CCH Sword		1	1
11=	Misys		1	1
14	Moodys Analytics			2
15=	Imagine			1
15=	IPS-Sendero			1
15=	Kamakura			1

How the poll was conducted

Risk polled thousands of banks, hedge funds, pension funds, insurance companies and corporate treasuries for this year's technology rankings, and received 2,655 valid responses. Respondents (split 38% Europe, 36% North America, 19% Asia and 7% other) were asked to vote for the technology vendors that provide the best product offering across a number of categories, including enterprise-wide risk management, risk capital calculation, front- to back-office trading systems, and pricing and analytics.

Participants were asked to base their votes on functionality, usability, performance, return on investment and reliability. Nominated technology companies were awarded three points for a first-choice vote, two for a second-choice vote and one point for a third-choice vote. Only technology end-users were allowed to vote. *Risk* conducted a comprehensive due diligence process, and disqualified all votes deemed to be invalid.

ENTERPRISE-WIDE

Market risk management

34 companies cited

2008	2007	Vendors	%
1	na	Algorithmics	14.3
2		Thomson Reuters	13.3
3		SunGard	12.8
4		Misys	9.7
5		Kamakura	8.3

Credit risk management

28 companies cited

2008	2007	Vendors	%
1	na	SunGard	14.6
2		Algorithmics	13.2
3		Moody's Analytics	11.2
4		Misys	9.1
5		Fermat	8.8

Integrated market and credit risk management

29 companies cited

2008	2007	Vendors	%
1	na	SunGard	18.1
2		Algorithmics	17.6
3		Misys	14.0
4		Kamakura	10.1
5		Fermat	8.4

Risk management – Basel II

22 companies cited

2008	2007	Vendors	%
1	1	Fermat	15.5
2	3	Algorithmics	14.4
3	2	SunGard	11.8
4	5	SAS	9.2
5	4	Misys	5.3

Operational risk management – risk control and self assessment, key risk indicators and internal loss management

26 companies cited

2008	2007	Vendors	%
1	na	Algorithmics	12.5
2		CCH Sword	11.7
3		SAS	10.8
4		Chase Cooper	9.2
5		Fermat	6.0

Operational risk management – capital calculation

23 companies cited

2008	2007	Vendors	%
1	2=	SAS	11.9
2	1	Algorithmics	11.1
3		CCH Sword	10.6
4	2=	Chase Cooper	10.3
5	5	Misys	7.3

RISK CAPITAL CALCULATION

Regulatory

23 companies cited

2008	2007	Vendors	%
1	1=	Fermat	12.1
2	1=	Algorithmics	11.3
3	4	Thomson Reuters	10.8
4	3	SunGard	8.8
5		SAS	7.7

Economic

25 companies cited

2008	2007	Vendors	%
1	1	Algorithmics	13.3
2	3	SunGard	10.8
3	2	Moody's Analytics	9.1
4	4	Fermat	8.5
5		Thomson Reuters	7.9

TRADING SYSTEMS – FRONT TO BACK OFFICE

Commodities

28 companies cited

2008	2007	Vendors	%
1	1	Murex	16.7
2		Thomson Reuters	15.4
3	2	Calypso	11.2
4	4	OpenLink	9.6
5	3	SunGard	8.6

Credit

30 companies cited

2008	2007	Vendors	%
1	1	Calypso	19.3
2	2	Murex	16.2
3	5	Thomson Reuters	14.3
4	4	SunGard	10.5
5	3	Misys	8.1

Cross-asset

28 companies cited

2008	2007	Vendors	%
1	3	Thomson Reuters	17.8
2	1	Murex	15.8
3	2	Calypso	12.5
4	5	SunGard	8.7
5	4	Misys	7.4

Equities

27 companies cited

2008	2007	Vendors	%
1	2	Sophis	16.6
2	3	Murex	13.6
3	4	Calypso	12.7
4	5	Thomson Reuters	10.4
5		SunGard	8.6

Forex

25 companies cited

2008	2007	Vendors	%
1	1	Thomson Reuters	16.8
2	2	Murex	12.8
3	4	SunGard	11.8
4	3	Misys	9.5
5	5	Wall Street Systems	7.4

Rates

24 companies cited

2008	2007	Vendors	%
1	2	Murex	15.2
2	1	Misys	14.2
3	3	Calypso	11.2
4	4	SunGard	7.5
5		Thomson Reuters	6.3

Structured products

22 companies cited

2008	2007	Vendors	%
1	2	Calypso	16.3
2	1	Murex	12.4
3	3	SunGard	11.4
4	4	Misys	9.1
5		Thomson Reuters	8.8

PRICING AND ANALYTICS

Commodities

33 companies cited

2008	2007	Vendors	%
1	1	Murex	18.1
2		Thomson Reuters	16.8
3		Bloomberg	13.0
4	**2**	**Savvysoft**	**10.3**
5		SunGard	7.3

Credit

31 companies cited

2008	2007	Vendors	%
1	2	Murex	16.8
2	3	Calypso	14.6
3	**1**	**Savvysoft**	**12.9**
4	4	Numerix	12.4
5	5	SunGard	7.4

PRICING AND ANALYTICS, CONT'D

Cross-asset

28 companies cited

2008	2007	Vendors	%
1	**1**	**Savvysoft**	**18.8**
2	2	Murex	18.6
3		SunGard	12.9
4	5	Thomson Reuters	9.9
5	3	Calypso	7.7

Equities

30 companies cited

2008	2007	Vendors	%
1	1	Sophis	17.1
2	3	SunGard	14.9
3	2	Imagine	10.3
4	4	Murex	9.8
5		Thomson Reuters	8.1

Forex

28 companies cited

2008	2007	Vendors	%
1		Thomson Reuters	14.3
2	2	Murex	10.6
3	5	SunGard	8.7
4		Bloomberg	7.4
5	3	Numerix	6.3

Rates

24 companies cited

2008	2007	Vendors	%
1	**1**	**Savvysoft**	**17.3**
2	5	Thomson Reuters	14.2
3	2	Murex	10.3
4	4	Calypso	10.1
5		Bloomberg	6.5

Structured products

26 companies cited

2008	2007	Vendors	%
1	1	Numerix	14.2
2	**2**	**Savvysoft**	**13.7**
3	4	Calypso	10.7
4	3	Murex	8.3
5		Thomson Reuters	7.6

OTHER

Limit checking

22 companies cited

2008	2007	Vendors	%
1	2	Murex	14.6
2	1	SunGard	11.2
3	3	Algorithmics	10.9
4	4	Thomson Reuters	10.2
5	5	Calypso	7.3

Collateral management

23 companies cited

2008	2007	Vendors	%
1	1	Algorithmics	15.5
2	4	Calypso	12.5
3	2	Murex	12.2
4		Thomson Reuters	8.1
5		Lombard Risk	7.9

Asset and liability management

26 companies cited

2008	2007	Vendors	%
1	1	SunGard	18.0
2	4	Fermat	13.2
3	2	IPS-Sendero	10.1
4	5	Quantitative Risk Management	8.9
5		Algorithmics	7.2

IAS compliance

25 companies cited

2008	2007	Vendors	%
1	4	Thomson Reuters	16.4
2	2	Murex	12.7
3	3	Calypso	12.6
4	5	SunGard	8.2
5	1	Misys	6.4

Data vendor

23 companies cited

2008	2007	Vendors	%
1	1	Bloomberg	14.9
2	2	Thomson Reuters	14.8
3		Kamakura	9.6
4	3	Markit	7.8
5	4	LIM	6.8