



INFORMATION TECHNOLOGY

Keywords

Basel Accord
Data aggregation
Enterprisewide risk
Risk-adjusted return on capital
Risk culture
Sponsorship

In these days of tight software budgets, cynics can be forgiven for thinking that Basel II is a gift to software vendors and IT departments. The need to get ready for the regulators is freeing up budgets in ways not seen since the Year 2000 and euro projects. Some observers may view the ensuing rush to get a slice of the pie as an unseemly scramble.

Less cynical and more practical players recognise the genuine gains of recent technological advances, and acknowledge the enormous benefits systems can bring. They know that technology is no silver bullet, but nevertheless they recognise that it must be deployed and harnessed to solve the formidable challenges facing the credit risk industry.

Business drivers

Nobody disputes that the regulatory requirements of Basel II are the greatest challenge currently facing the industry. Even before Basel II, however, banks were working to integrate their disparate systems. These long-term projects were galvanised by the events of 2002.

The seismic shocks that year caused by the collapse of companies like Enron and Worldcom swept away many old certainties. "It is a new era", says Philippe Carrel, director of risk and trade management at Reuters. "There is no longer the notion of the less risky counterparty. It does not matter if you are AAA rated, or have been in business for 200 years, everybody is under scrutiny."

Tim Backshall, director of credit markets strategy at Barra, agrees. Commenting on today's slim margins, Backshall says: "There is a danger that one blow-up in your portfolio will cause you to lose everything. There is a perception that nothing is safe anymore. Portfolio risk managers need much more rigorous modelling."

A common story fast acquiring the aura of myth tells how one bank took two weeks to work out how much they were owed, and how much they might have lost following the collapse of Enron. Stories like this give new impetus to initiatives to centralise credit risk reporting – and, indeed, since 2002 financial institutions have been looking even more energetically at ways of reducing their ongoing exposure to potentially catastrophic credit events like Enron. CFOs want to assure their boards, and CEOs want to assure their shareholders, that "this is not going to happen to us".

Basel II: a gift to software vendors?

_by Ian Murray

The New Basel Capital Accord (Basel II) has led to a surge of activity in IT departments and among systems vendors. Financial technology consultant Ian Murray looks at the demands faced by commercial credit managers and the IT-related obstacles they have to overcome.

The emphasis is as much on the life of the risk as on its inception. "Given the state of the economy as we now see it, the hottest topic at the moment is early warning", says Robert Endersby, head of credit information in the corporate banking and financial markets division of the Royal Bank of Scotland.

"Most people have risk-adjusted pricing models. These definitely help to answer the question 'Am I doing the right deal?' They assist you in making the right risk reward decision at the beginning of a credit. Once a transaction is on the books, however, you need additional technologies – and, more importantly, world-class processes – to enable you to stay ahead of the curve on deteriorating credits."

Credit and operational risk

Basel II extends capital adequacy regulations from market risk into credit and operational risk, and makes centralised risk reporting a must for the whole organisation. Although many financial institutions were doing this anyway, Basel II and recent events have catapulted credit risk to centre stage.

"Basel II raises the game in terms of the need to have robust systems," says Endersby. "It actually lifts this whole story to a new level, because it now gives the credit risk management process a direct and transparent relationship with the capital requirement of the bank."

"Up until now, of course, the capital adequacy regulations did not really require you to have deep-seated information about the credit quality of individual counterparties. Now we are in a situation where regulatory capital is driven by the quality of the individual counterparty, so risk and finance systems have got to be able to drill down to a much deeper level of granularity."

Banks now need validated, back-tested, robust risk models to satisfy the regulators. Carrel emphasises the need to be able to prove what is being done: "You can go on allocating risk weighting coefficients to a counterparty as before. But now with the internal ratings based (IRB) approach, you are

responsible for scrutinising the creditworthiness of your counterparty, and demonstrating that you have the team and procedures in place to do it, and to keep on doing it."

While some banks and financial institutions may do the minimum required to comply with Basel II, more sophisticated players are convinced that this is a golden opportunity to gain competitive advantage. Beyond reducing capital requirements, the perception is that compliance has no value.

As Peyman Mestchian, head of risk management at SAS UK, explains: "Ticking the box for the regulator does not create value for companies. We need to go beyond Basel in terms of value creation." As well as cutting the cost of capital, using software to predict and monitor credit risk will allow deals to be priced more keenly, and will ensure that they fit more precisely with a bank's appetite for risk.

Data challenges

All observers agree that the biggest challenge presented by Basel II is the need to centralise data – to collect it, check it, aggregate it and validate it. Some have described this as the liberation of data; others describe it as the beginning of the reign of data. Most practitioners would be pleased just to get beyond the pain of data.

"Before you start talking about state-of-the-art risk modelling, the fundamental issue for most banks over the last 10 or 15 years has been simply how to get all your information, such as limits and outstandings and the classic cuts from a credit management perspective, into a single source," says Endersby.

There is general agreement that many banks are simply not yet as ready as they could be. This is partly because Basel II is a moving target, with the handling of operational risk in particular still unformed. This perception is aggravated by the recent release of the latest Basel II consultative paper (CP3).

"Institutions are looking at the Basel Accord, they are looking at CP3 and wondering why it changed so much from CP2, and they are sitting on their hands waiting for

CP4", says Dennis Cox, managing director of UK-based consultancy Risk Reward.

This lack of readiness is also caused by the huge size of the data aggregation problem, and is exacerbated by the looming deadline for the start of historical data collection.

Banks need at least three years of historical data to validate default models. For this to be in place prior to the launch of Basel II, they have to analyse their data and have systems in place before the beginning of next year.

Even with full access to all available data on counterparty risks, incomplete information remains a big issue. Alongside the lack of statistically significant amounts of data, this could also be the result of fraud, misleading company reports, or the lack of corporate transparency in offshore tax havens and many other parts of the world. Analysts point to the need for predictive models which can perform with the data that is available.

The institutions' lack of readiness affects more than just compliance. Even without Basel II, the consequences for an institution of not knowing its total exposure can be severe. "You must ensure that you have the total credit position," says Endersby, "or you run the risk of misinforming your own executive about the correlations and the concentrations that you have. Worse still, if a bank then tries to begin to do active portfolio management off the back of that, it may run the risk of actually mis-hedging its portfolio, because it has not understood the quantum of its risk."

Difficult as it is to centralise so much data, with most databases not sharing the same structure or counterparty codes, this problem pales beside the issues of data quality and consistency. GIGO ("If you put garbage in, then you get garbage out") is an oft-heard acronym in data management circles. This holds true with even the most sophisticated of software and analytics.

"People so often simply replace one technical solution with another technical solution," laments Endersby. "They do not actually improve the quality of their information because they do not focus on the underlying quality of data. You need to decide which is your golden source. Then you can say 'This is where this particular data input point is'. If anybody else wants to use that piece of data, they have to get it out of this source." This approach encourages ownership of the data by the people responsible for the system, and promotes quality.

Practical obstacles

The multiplicity of systems in use in most banks, and in all their global offices, affects more than just data. Each system typically uses its own financial libraries, which contain the algorithms for everything from pricing different instruments through to models for assessing their risk. "The financial libraries are never the same across systems," says Carrel. "At worst, they produce different results. At best, they are not incompatible."

The routines in the libraries are often opaque, and errors may be subtle and hard to identify. Carrel points out that these differences require a huge amount of effort to reconcile, control and audit. This effort is not only costly, but also a new source of operational risk in itself.

“

All observers agree that the biggest challenge presented by Basel II is the need to centralise data – to collect it, check it, aggregate it and validate it. Some have described this as the liberation of data; others describe it as the beginning of the reign of data.

”

One reason for the existence of so many systems is that they serve a very real need. It is not simply a case of jealously guarded fiefdoms, although obviously internal politics plays a part in the enduring existence of system incompatibilities. Different departments within an organisation have different responsibilities, which quite rightly determine their focus and priorities.

"Without Basel II, the credit guys could carry on with their models and their methodologies," says Endersby. "But now they and the finance department both need to share the same, more detailed view." In many banks, the finance department runs its own set of applications, such as general ledger, MIS reporting and regulatory reporting systems, with a different basis from credit systems.


Despite these concerns, there is an obvious reluctance to rip out systems that fit the needs of their users, or which represent a

massive investment of time and money. Not least of the reasons for this reluctance is the fact that financial institutions have in the past seen too many astronomically expensive system replacement projects which simply failed.

The biggest obstacle is often internal. Experienced IT professionals know that even the most sophisticated software will fail if, for whatever reason, users do not use it. Some of the problems manifest themselves in users failing to understand or trust their systems. Neural net technologies can be opaque, and even the oldest and simplest of scoring models can be impenetrable and difficult to change, so it is not surprising that many users feel frustrated by, and do not trust, their systems.

Reluctance to cross the intimidating hurdle of learning new systems can be huge, and the resulting lack of understanding strengthens users' need to hang on to some vestige of manual control. This can be true even when software is user-friendly and intuitive to use.

Inter-departmental rivalry and an organisation's reward systems also play a large part in systems failing to provide the benefits they promise. The cause of many of the problems departments and users have with their systems, however, is a lack of sponsorship at higher levels within the organisation.

Another common complaint among credit practitioners is the lack of investment in what is seen to be a middle or back-office system, with the front office always getting the lion's share of resources. There is a perception that credit is not seen to be at the sharp end, and is therefore not a top priority, especially in hard times. Perhaps Basel II and recent events like Enron will help to change that. 

Ian Murray is a UK-based financial technology consultant with extensive experience of delivering software solutions to the banking industry

Email: iancri@ianmurray.co.uk

This article was prepared in association with Bob's Guide (www.bobsguide.com), the independent online guide to financial services providers.

In Part II of this article, which will be published in August's *CRI*, Ian Murray will look at the IT systems marketplace and outline the capabilities of the available software.

↓ **INFORMATION TECHNOLOGY**

Keywords
 Data aggregation
 Enterprisewide risk
 Software vendors
 Web services
 XML
 Risk culture

Basel II: a gift to software vendors? – Part II

_by Ian Murray

In Part I of his article on the implications of the New Basel Capital Accord on IT vendors, freelance financial technology consultant Ian Murray reviewed the IT-related obstacles currently faced by commercial credit managers around the globe. In this month's issue, Murray looks at the IT systems marketplace and outlines the capabilities of the available software.

Some observers have commented that there do not seem to be any real new offerings in the credit risk systems marketplace. This may be because the New Basel Capital Accord (Basel II) has yet to be finalised (nobody wants to spend a lot of effort on developments that may later have to be scrapped). Others say that they are not sure how much of what they hear is just hype from software vendors jumping onto the credit risk bandwagon.

All this belies what is in fact a flurry of activity in the marketplace. Vendors and consultants report a surge of interest in their services and systems, and solutions are now coming on stream that represent enormous amounts of work and investment on the part of their developers.

Large number of offerings

Indeed, the risk systems marketplace is notable for the sheer number of offerings available. Different banks have varying levels of budget and appetite for all-in-one (as opposed to separate) systems. Despite all the systems, many vendors wryly note that their leading competitor is the product called "In-house Development".

Vendors are currently trying to move out of their traditional market segments, and are pushing the functionality of their solutions towards the prize of enterprisewide solutions.

The retail credit systems sector has historically been differentiated from banks' other activities, most of which tend to share the same corporate counterparties and deal in some way in financial instruments and major loans. Now, under Basel II, the retail exposures need to be fed into the companywide picture

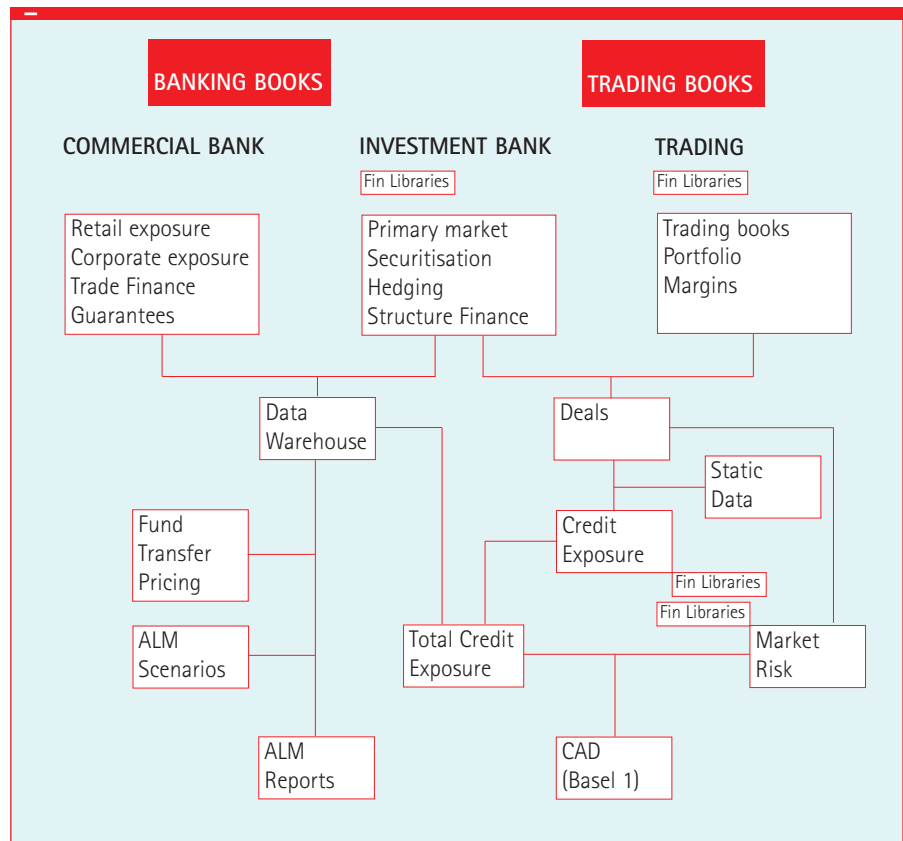


Table 1: The institutional approach to risk reporting was vertical. (Source: Reuters)

along with all the others. Major players in this space include Fair Isaac and Experian Scorex.

Systems for the corporate lending sector, such as those from IQ Financial, are well placed to contribute to a bank's understanding of its credit risk. Credit risk mitigation activities such as frequent revaluation of collateral, trading in the secondary loan market and credit derivatives, all fit squarely in this space.

Vendors with strengths in front-office limits management, such as SunGard, Algorithmics and Misys, have typically moved from exposure management through market risk analytics and on to credit risk.

The size of these companies often appeals to major banks that are looking for what they see as the safety of equally major suppliers.

The risk analytics space has many other players, from vendors who are the leading providers in their own regions, through to small niche companies, often founded by academics and statisticians. These specialists continue to pioneer solutions to some of the seemingly most intractable problems of risk analysis. Larger players also tend to have research

departments staffed with PhDs, also with links to universities.

Data vendors such as Experian in retail credit, Moody's in corporate ratings and Reuters in news and prices, already directly or indirectly offer products in the risk analytics field. Other analytics vendors also regard the provision of value-added data along with their software as key to their competitive advantage.

The fund management (buy side) sector is not directly affected by Basel II, although some feel that reactions to Basel II on the sell side will inevitably affect the buy side. Nevertheless, credit risk analysis obviously remains an extremely high priority for commercial, if not for compliance, reasons. Companies like Barra are strong in this space.

Data mining, where pattern deduction and other risk analytics have to be run on massive data sets, opens doors for companies with strong track records in both statistics and industrial strength data engines, such as SAS, which is strong in the retail sector.

Most observers believe that data warehouses, whether virtual or actual, are central to

any bank's response to Basel II. This means that vendors with a strong history in databases and generic data warehousing are also moving into the space for enterprisewide risk management.

In the past, some vendors may have adapted their strengths to ERP or CRM systems, but now they have the opportunity to map their experience in companywide systems onto risk.

Oddly, despite the terrible press that CRM systems have received, they may be well positioned to redeem themselves by providing centralised customer and counterparty solutions, a key facet of today's credit risk challenges.

Bankwide accounting systems vendors are also beginning to offer Basel II solutions. Their strength comes from the fact that accounting systems have typically been the basis for regulatory reporting to date. Once again, they have been in a companywide position for many years.

Another segment comprises asset and liability management (ALM) systems, typically run separately by treasury departments. Their involvement in funding, budgeting and forecasting inevitably involves analysing risk and making what-if predictions about the future. IPS-Sendero, together with Kamakura, has a significant presence in this market in the US.

Table 1 (left) shows a notional view of the many vertical risk system data flows in financial institutions today, where the banking and trading books are separate. Table 2 (right) shows what the goal of horizontally structured enterprisewide systems.

Many of the players in all these various market spaces claim to offer enterprisewide risk management solutions, some with more justification than others. Some solutions are specialist vertical systems joined together to form a whole. Other solutions are horizontal systems which are starting to acquire specialist features.

Many observers feel that the phrase "enterprisewide risk management system" has been abused in recent years, and in fact represents an impossibility. If this is true, then the recently predicted imminent demise of the large systems integration companies, and of the middleware and data mapping vendors, may be exaggerated. Given the overall state of readiness for Basel II, there will probably be lots of work for them to do in the credit risk systems arena.

They are, however, ultimately under threat from today's core IT technologies. And it is these new technologies that offer some of the best hopes for finding solutions to the problem of the multiplicity of systems and all the attendant obstacles to centralised credit risk management.

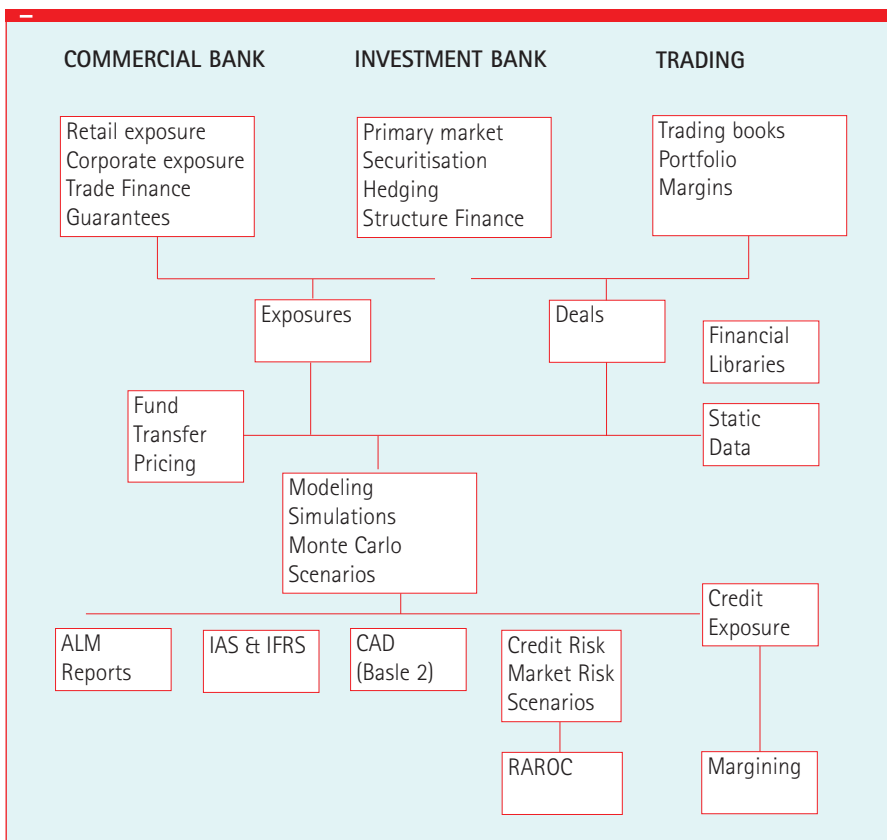


Table 2: Basel II leads to an enterprisewide risk approach. (Source: Reuters)

Problems linking systems

The numerous systems in use in banks are more than just a problem for data consolidation and quality. The problem of linking systems together to pass on or share this data can also be overwhelming.

The problem has been exacerbated by the sheer number of links that banks and software houses have had to build and maintain. Many of these links have been point-to-point, so, for example, each system that needs to use SWIFT will link to it by itself.

Worst of all, the data requested by these systems must come in the correct format, but this is constantly changing over time. And few of the links are simple. Typical industry interfaces for settlement, payment or confirmation systems, for example, may have scores of different message types.

The cost of constantly maintaining these links in the past has been severe, and it can cripple software vendor R&D budgets and severely impede mission-critical project development in major banks.

An obvious solution is to have each system

talk to a central system which talks to all the others, acting like a hub at the centre of a wheel, with the links being the spokes. For a group of six systems, the links drop from 20 to six. This is essentially the role of messaging middleware.

There is still the problem of building each link each time. Typically to date each bank has built its own, and each vendor has built its own, initially inside each application, but more recently separately. A piece of software that knows how to take data from different applications and send it to an industry standard interface (such as SWIFT) is often called an "adapter".

After building an adapter, it has to be changed constantly to match the ever changing requirements of the other application's interface. New information is required, and old information gets longer or shorter.

A large part of the problem with this constant change is that the specifications for these interfaces are extremely cryptic, and the resulting messages are indecipherable to anything except an up-to-date adapter that has been laboriously programmed to understand it.



INFORMATION TECHNOLOGY

Keywords

Data aggregation
 Enterprisewide risk
 Software vendors
 Web services
 XML
 Risk culture

In the bad old days, if you looked at a file of messages going to, say, a clearer, you would see an unending stream of digits and codes packed tightly and incomprehensibly together, like the scrolling screens of gibberish so beloved by Hollywood when portraying computers in the movies.

If one number in a stream like this is corrupted, the whole set becomes useless. Technicians or auditors looking at the file to resolve a problem find themselves helpless. And it is impossible to add new data content or extend old data fields without rebuilding the whole adapter at both ends.

Creating one giant, monolithic system capable of doing everything is not the answer. These always fail, as they are too large to build and control, too hard to understand, and impossible to change. User departments hate them for their clumsiness and the impossibility of getting what they need from them to do their jobs.

Since these Tower of Babel systems tend to be struck down for their ambition, we have to solve the problems of having a babble of best-of-breed solutions instead. In any case, for reasons already explained, many banks are reluctant to take a slash-and-burn approach to legacy systems.

Middleware and horizontally structured systems help a lot, but do not in themselves address the impenetrable, constantly changing messages of the links, nor the multiplicity of ways they are carried down the wires. Here is where the new tools come into play.

Web services technologies

"Web services" might sound like yet another potentially empty marketing slogan, but the phrase loosely describes a set of technologies that are genuinely transforming the way IT works.

Unfortunately, many people remain confused by or unconvinced about what these tools can do. It can be difficult for a business user to pick his way through what is really an advantage, and what is simply a new IT vogue that may well eventually become the leading edge technology, but for now is still what cynics call "bleeding edge" technology.

Although the phrase "web services" contains the word "web", users can gain the benefit of these tools without going anywhere near the World Wide Web. Tools and techniques such as component-based architectures, .NET languages and XML can radically improve systems within the four walls of a bank. Although the web does not have to be involved, the web and the internet are the inescapable background to and in many ways a catalyst for these developments.

The use of globally standard browsers on

users' PCs has massively simplified the distribution and updating of software. It used to cost a bank huge amounts of money (and delay) to distribute new software to their thousands of users. Now the users can click on a web address in their browsers and run the latest version of their application without anybody touching their PC.

Firms like MB Risk Management (MBRM) offer genuinely commoditised risk component libraries over the internet. The web has revolutionised the way components like these can be distributed and supported, and promises to help dramatically reduce the cost of building analytics libraries into everything from spreadsheets to huge banking applications.

The essential premise of the internet, which is that it can link sites together without them being directly wired together, is set to fundamentally change banking links. As long as you have a site's internet address, you can reach it, regardless of where it physically is. SWIFT's recently launched SWIFTNet exploits this technology, and it has the potential to affect almost every use of banking systems.

So much for the "web" part. What about the "services" part? This simply describes a loose set of tools, techniques and applications that are waiting on the network to be used to bring services to your desktop PC. Web services offer the prospect of systems being used by other systems for their know-how as well as their data.

Standards and tools

The labels .NET and XML are both intimidating acronyms to people outside the IT world, but essentially represent very simple concepts.

.NET is essentially a blanket name that Microsoft gives to the programming languages and tools which can be used to build the standard software components used in web services. Other vendors such as IBM also provide many of the same kind of tools.

Using industry standards, a component built for a Unix machine can now be used from a PC, previously an impossibility. Where it used to be that applications tended to be impenetrable solids that only worked on one kind of machine, now they can be loosely constructed to use generic components which do not care what machine they are sitting on.

These standards offer the possibility, for example, of greatly reducing the effort and risk entailed in duplicating financial libraries. The Holy Grail of software reusability should now be easier to achieve.

XML is nothing more than a generic industry standard which specifies a way of passing information between systems. Unlike the bad old ways described above, it sends messages in

a simple text form that any application and any computer can cope with. This eases the problem of reading these messages for both computers and people.

XML also addresses the problem of incomprehensible and impossible to change messages, by allowing messages themselves to describe what they contain. This has opened up the possibilities for industry specific message standards in the form of agreed implementations of XML designed to suit a particular purpose.

For example, FpML is an implementation of XML which specifies a standard way of describing and sending information about financial products. XBRL does the same for business reports and accounting statements, a vital component in credit risk analysis.


Standards often get stalled by the length of time it takes to get industry consensus, but the XML standards offer huge promise when they take off.

Benefits outweigh disadvantages

Although XML has been enthusiastically adopted in numerous projects by most of the big banks, some feel that it has problems, such as the lack of a common security standard and limited performance in speed critical applications. Despite this, they agree that the technology is maturing fast, and the benefits outweigh the disadvantages in most situations.

It is obvious that badly written software can be dangerous. Commentators note that IT departments should not be carried away by the promise of these easier technologies, and should be disciplined in adhering to their development methodologies.

It is also a truism that if you computerise a business process that is working badly, then you simply get a business process that works badly, but at a frighteningly faster rate. Effective and high-level business sponsorship is essential to deal with the cultural and technical challenges posed by Basel II and the need to centralise credit risk reporting.

Given this discipline and sponsorship, and a realistic approach to business process change, recent developments in the IT world are well poised to increase the speed and reduce the cost of getting us nearer to the nirvana of a great credit risk modeller in the sky. 

Ian Murray is a UK-based financial technology consultant
 Email: iancri@ianmurray.co.uk

This article was prepared in association with Bob's Guide (www.bobsguide.com), the independent online guide to financial services providers.