Where is the RM in ETRM?

Overview

Is your organisation experiencing any of the following challenges?

- Modelling market volatility
- Complex portfolios combining physical assets and financial contracts
- Consolidating risk metrics whilst going through mergers and acquisitions
- Increased oversight in risk management by stakeholders

As an energy market player, you understand why you have needed to increase your focus on the systems that record your trading activities and support decision-making – commonly referred to as Energy Trading and Risk Management (ETRM) systems. Your increasing demands for rigorous and disciplined processes of identifying, measuring and reporting risks across all business units and portfolios of financial contracts and physical assets must also be met. More importantly, you need to utilise relevant market and credit risk metrics in these processes.

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All stakeholders in an energy organisation, including Directors and Managers need to be concerned if they don't understand how risk is being treated in their organisation. They need to ask, "Are we getting our money's worth, or worse, are we compromising our profitability and increasing our counterparty and portfolio wide risk exposures with our current ETRM system?" You could be if you are expecting your ETRM system to fulfil all of your risk and valuation needs.

This business briefing discusses common issues with the "Risk Management" or "RM" part of "ETRM" systems and why ETRM systems alone are not sufficient to address the comprehensive risk and valuation requirements of an energy organisation. It also addresses the obstacles faced in attempting to overcome these deficiencies internally and suggests some alternative approaches.

What makes energy risk metrics difficult to attain?

A large proportion of energy companies have exposures which are driven by portfolios that contain both physical assets, (such as thermal, wind and hydro power plants, gas storage facilities, and pipelines), as well as complex financial contacts (such as power purchasing agreements, tolling agreements and virtual storage contracts). As a result, valuation and risk calculations for participants in energy markets

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are more complicated than for those in financial markets for two key reasons:

- Firstly, the underlying market dynamics of energy prices are more complex than in financial markets. For example, gas and power prices exhibit between them strong seasonality and price spikes.
- Secondly, the contracts traded in energy markets are complex due to the fact that they:
    - usually involve spreads (crude versus refined products, summer versus winter prices, gas versus power, etc),
    - often involve volumetric uncertainty (the exercise of gas and power swing contracts for example, or the operation of a gas storage facility)
    - typically involve back-to-back physical assets (such as a gas storage facility and a power plant), and thus inherit physical characteristics (such as injection and withdrawal rates for gas, minimum up and down times for power plants, and flow constraints for pipelines).

Due to these greater complexities, effective market and credit risk management in energy organisations can only be achieved by using a unified and consistent framework and by applying a rigorous and disciplined process of identifying, measuring and reporting risks across all business units and portfolios of an organisation.

More often than not, market participants rely on their commercially available ETRM systems to perform these 'risk management' functions - after all is what the RM in ETRM stands for.

Disappointment arises however when users discover the gap between their needs and what these ETRM systems are actually able to provide. It is widely regarded that, of all the different functions that an ETRM system is designed to perform (deal and data capture, settlements, invoicing, credit management, scheduling, nominations, etc), risk management is the single area with the largest gap between the functionality offered by the vendors and the requirements of the user.

Why is risk management falling behind in ETRM systems?

Over the past 10 years, the pace of development has been very fast in the types of contracts and assets traded, and the way in which deals are priced and structured. These are complex deals. The risks are different, the exposures wider – new, more sophisticated valuation techniques and risk metrics are needed.

Do you know what metrics are inside your ETRM system? Do they address the sophistication of your portfolio? Closer inspection of the "comprehensive risk" offering of the vast majority of ETRM vendors is likely to reveal four different types of Value-at-Risk (VaR)!

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Are you one of the end users forcing a complex, multi commodity, multi asset and multiple geography portfolio into a system with risk approaches, models and capabilities from 10 years ago? For the average market participant - those whose portfolios contain physical assets and complex hedge contracts - VaR even lacks credibility as a relevant risk metric.

The problem is that every energy portfolio is different. There exist a wide range of assets – thermal, wind and hydro power plants, pipelines, storage facilities, transmission lines, refineries – and within each group there exists widely different constraints and flexibilities. Financial contracts linked to these assets (power purchase agreements, tolling agreements, virtual storage, transportation contracts, etc.) inherit many characteristics of the assets, and so are also non standard. It is difficult for ETRM players to develop their holistic offering and at the same time develop individualised approaches to the sophisticated requirements for energy market metrics. Consequently, the standard models and approaches in their risk engines do not provide the relevant market and credit risk metrics actually required by the majority of market players.

What happens in practice then, is that ETRM systems end up being primarily used to capture and report positions of trades. However, it is important to realise that position reporting and risk management are not the same thing.

Risk management is not the core competency of an ETRM platform

Essentially, ETRM systems encapsulate three core areas of functionality:

1) trading, deal capture and reporting,
2) data management, and
3) valuation, optimisation and risk management.

The first two areas are well served by the vast majority of ETRM systems and are generally not characterised as 'complex'. Once the deal structures are understood and the interfaces with the data providers and system operators are mapped out, then it is relatively straightforward to build out the required functionality in an ETRM system, without the need to employ "rocket scientists". However, the development of valuation and risk engines, for the reasons described earlier, are very complex and require a substantial and on-going, intellectual and technical investment.

ETRM vendors do not seem to be providing up-to-date risk management functionality because of this level of investment required and the fact that they will win new clients regardless, primarily due to the energy trading "ET" elements of their systems, rather than the risk management "RM" elements of their systems.

From a sales perspective, it is very important for an ETRM vendor to demonstrate how their system handles the lifecycle of a deal. During the

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sales process, the first two core areas of functionality (noted above) are relatively easy for ETRM vendors to demonstrate their capabilities. However, there are typically relatively few people involved in the system selection panel at the potential customer who really understand their organisation's valuation, optimisation and risk management needs. Therefore, ETRM vendors do not have to showcase this area in their demonstration as thoroughly as the other areas in order to secure the sale of a platform.

Lack of influence of Risk Managers in software purchasing decisions

Lacima's experience is that the influence of Risk Managers on decisions in buying ETRM systems is disproportionately weak, compared to the influence of the front office and IT groups. Increasingly, ETRM system selection and implementation projects are on such a large scale, often amounting to millions, if not tens of millions of dollars over a period of a number of years. ETRM procurement comes more and more into the domain of the IT department, who often have less understanding of the complexities of risk analytics. As a result, ETRM platform selection gets based more on which system fits best into the architecture of the organisation than on the needs of business (risk) users.

What's promised for risk management is not delivered 2 years on

From a project implementation perspective, what vendors sell and what actually gets implemented two years down the line are often two completely different things. Often risk calculations are in the 2nd or 3rd stage of an ETRM implementation project, and as such it can be one or two years into an ETRM implementation before the risk element gets implemented. It is not unheard of for companies to find themselves in a situation where the risk component of the ETRM platform does not do what the vendor promised two years previous – even through bills have been paid. As a consequence, expensive ETRM platforms are often used as energy trading systems and the whole area of risk, valuation and optimisation is conducted outside the system, usually in spreadsheets. In the current climate of increased regulatory oversight, this situation increasingly creates problems for many market participants.

Why resorting to spreadsheets is not the answer

As traders expand their portfolio into new markets, assets classes and deal structures, ETRM vendors are unable to react quickly enough in developing the required risk and valuation functionalities. As a result, market participants resort to using spreadsheets and other ad-hoc tools to bridge the gap. A study conducted in 2009 by the industry analyst firm CommodityPoint suggests that 44% of trading firms are utilising spreadsheets and home-grown solutions for risk management – and these are just the respondents that admit to doing this...

Spreadsheets… often result in a simplistic representation of risk that is prone to error and does not adhere with regulatory requirements

Additionally, it is a common scenario for energy organisations to have multiple ETRM systems in place that deal with specific commodities, regional markets or contract types. This scenario is further complicated with the high profile mergers and acquisitions that have taken place in recent years in the industry, notably GDF Suez /Electrabel, GDF Suez / International Power, Vattenfall /Nuon, RWE / Essent. The merged organisations find themselves in a situation where they need to achieve a holistic view of risk exposures across a large number of diverse portfolios and business units. Again, this is typically performed in spreadsheets.

However, there is a danger that position consolidation in spreadsheets can be performed in a highly unsatisfactory manner. Either risk calculations from different risk systems, calculated in slightly different ways, need to be amalgamated to a single metric, or positions from the different systems are grouped together (typically in monthly buckets), resulting in a simplistic representation of risk that is prone to error and does not adhere with regulatory requirements.

Pitfalls of an internal development approach

It is also not uncommon for companies to attempt to bridge the shortfall in the risk and valuation capabilities of their ETRM system by building internally developed solutions. However, it is common for these projects to be run by just one or two individuals and hence the functionalities of the resulting system often have a very narrow focus. Furthermore, organisations face a major dilemma if these key individuals leave, as it is common for internal projects to lack documentation of the underlying models and methodologies employed, hence inhibiting knowledge transfer of intellectual property. As a consequence, business users are stuck with inflexible software.

A comprehensive risk analytics system should meet the needs of all parties in a transaction: trading, structuring, risk and valuation groups. Development projects of this nature require a diverse range of skill sets including from quantitative researchers, financial engineers and programmers with database management and user interface building skills.

Before embarking on an in-house risk and valuation development project, organisations need to ask themselves the following:

- Is risk and valuation system development our core competency?
- Do we have the resources and skill sets needed across the key departments involved in the project?
- What are the chances of this working and will it succeed?
- How are we going to support the system into the future?

It is easy to underestimate the effort and cost that is involved in building a comprehensive risk application. History shows the chances of a project of this nature running on time and on budget are slim.

Lacima Analytics can be plugged into any ETRM system to enhance existing risk management functionalities or overlayed on top of multiple ETRM systems to provide a consolidated view of risk.

A new approach is available

Valuation and risk management is an area where Lacima has made a significant intellectual and technical investment over many years. With a large team of highly skilled people, Lacima has developed a risk engine application - "Lacima Analytics," which works flexibly with in-house custom developed analytics, and has been designed to work with existing ETRM systems. The application recognises that the key strength of internal quant groups is often the development of specific models to value particular contracts or assets, and not the development of commercial level software applications. The plug-in architecture of Lacima Analytics allows for in-house customisation and integration of proprietary models.

In addition, the application is designed to supplement, and not replace the energy trading functionalities that ETRM systems do very well, and so provides a cost-effective solution to buying a whole new system, just to get better risk management capabilities.

A third key strength of Lacima Analytics is that due to its construction, it can work with multiple ETRM systems, providing a single source of the risk truth.

Conclusion

As the thinking around risk management and valuation methodologies has evolved over the years, this evolution has been much faster than the relevant functionality offered in ETRM systems. This in turn has created a demand for sophisticated risk analytics solutions to supplement ETRM software and avoid reliance on spreadsheets. Market participants want up-to-date risk analytics that address the complexities of their businesses, which their ETRM systems often cannot provide.

From a risk perspective, measuring risk across many countries, complex portfolios, and different functions of business is highly challenging and often beyond the scope of an ETRM system's capability. Lacima understands this and offers software solutions built by a specialist team of risk and analytics experts who understand the complexities of physical assets and financial contract combinations and how to incorporate them into a risk framework. Lacima's solutions work effectively with ETRM platforms, enabling market participants to link business processes to their trading decisions and risk assessments. Directors and Managers should be asking themselves, "Should we be compromising our profitability or increasing our counterparty and portfolio wide risk exposures when a simple cost effective solution is available?"

About Lacima

Lacima is a specialist provider of software and advisory services dedicated to valuation, optimisation and risk management for global energy markets. We help you to maximise your profit potential and make more informed decisions by providing tools that yield more accurate

valuations, hedging and risk exposure analysis for portfolios of financial contracts and physical assets.

Clients of our software and services include structuring, valuation and risk teams in vertically integrated energy companies, energy retailers, financial institutions and large energy consumers in Europe, North America and Australasia.

Our software solutions have been developed and implemented by peer-recognised experts in energy analytics, offering an unparalleled level of expertise and personalised support.

For further information, visit **www.lacimagroup.com** or email **info@lacimagroup.com**