

Energy Scenario Management

Guy Isherwood interviews Dr. Wolfgang Ferse and learns about how traditional ETRM/CTRM systems are no longer sufficient if energy sector participants want to effectively assess, manage and simulate risk across the entire business.

Adapting to new rules and increased competition in physical and financial markets, navigating the nuances of national and regional markets, and increasing trading and evaluation capabilities as the role of energy derivatives becomes more prominent, are just some of the key challenges that energy market participants grapple with every day.

Energy companies transact in multiple commodities, markets, instruments, assets and currencies, and utilise multiple transportation methods. They make their buying, selling and dispatch decisions by constantly tracking and analysing price trends, price correlations, supply/demand imbalances, physical system constraints, weather forecasts, and a plethora of other factors, both internal and external to the company.

Even the more 'simple' energy trading activity can involve complex deal structures and specific, highly detailed logistical requirements. When humans are faced with a decision matrix

of such large dimensionality, poor decision making can often result. Assumptions and prioritisations are made – often unconsciously. Consequently, sub-optimal outcomes often occur – even for the most experienced and talented energy traders and portfolio managers.

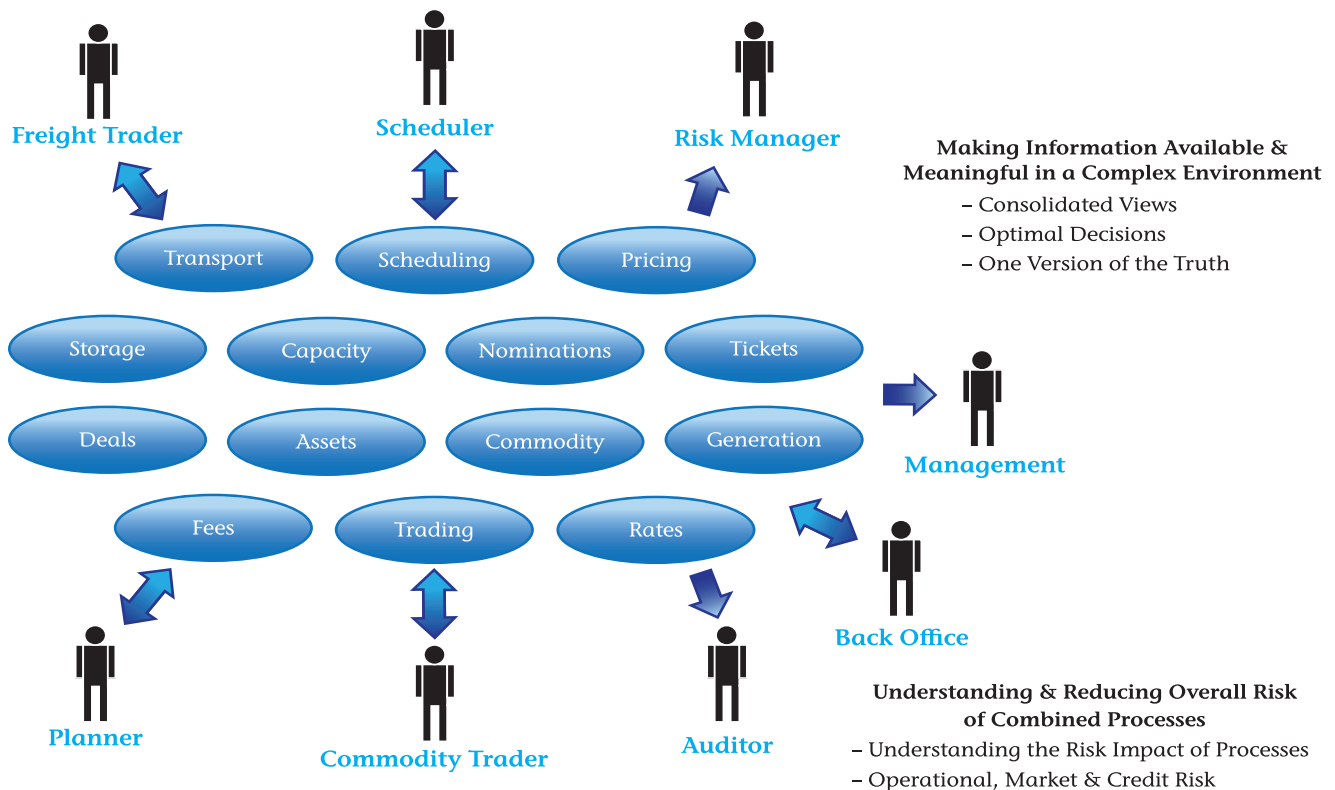
As a result of this complexity, the systems that are used to capture, track, analyse and account for energy company's activities – the trading, risk management and reporting systems – need to be built to be highly configurable. But just employing a traditional ETRM system is no longer enough as, for many technology providers, this integration process has been only partial at best. True optimisation is required because if optimisation is not truly integrated with energy trading and risk management, then its usefulness is undermined.

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What if the trader/manager had a screen to run all necessary analyses simultaneously? Together with 'what if' analysis and the ability to 'stress test' the portfolio, the trader/manager could

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Figure 1: Information Availability ... Decision Making

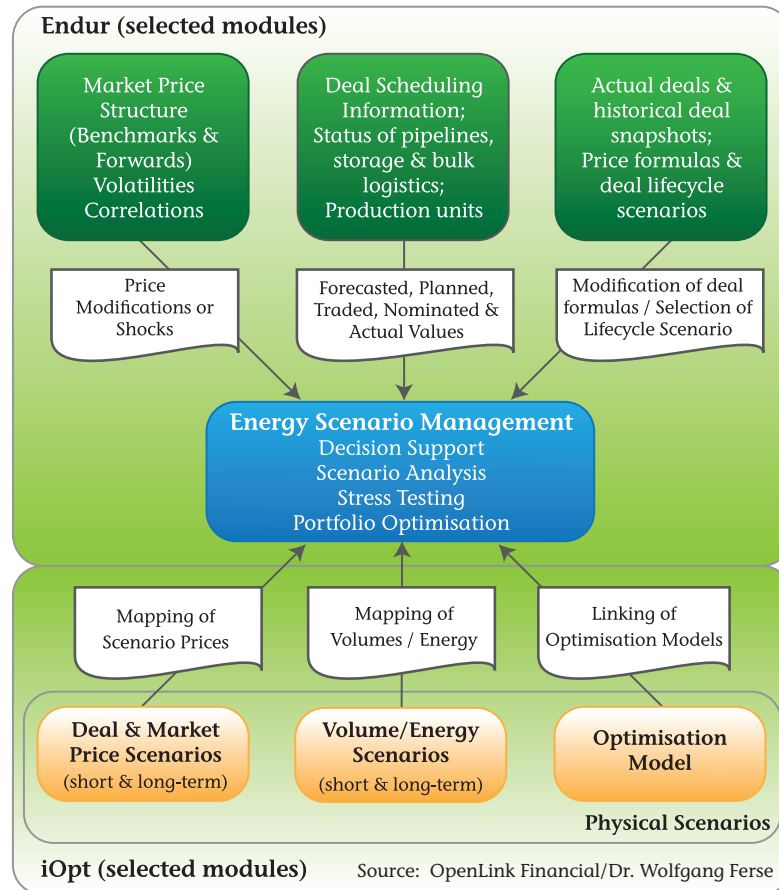


Source: OpenLink Financial/Dr. Wolfgang Ferse

Being Audit-Compatible

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Figure 2: Complex Information on One Central Module



- Ability to create and to execute complex Energy Scenarios from one central place (no information loss which could be caused by simplified interfacing)
- Allows analysis all of their Deals & Assets in the different stages of their physical lifecycle
- Provides the needed Decision Support for managing the Performance & Risk of complex Energy Portfolios

gain a more complete and robust view of their actual risk position (and the alternatives) in real-time – not to mention the competitive advantages this would bring.

What is required, therefore, is a system which truly integrates all the different aspects of the business; which (as their name suggests) has been the guiding principle for ETRM market leader OpenLink Financial Inc. since it began operations in 1992. A ‘Smart ETRM’ is required according to Dr. Wolfgang Ferse, EVP commodities and energy solutions with OpenLink. “Such a configuration provides traders and risk managers with important information about the impact of decisions on logistics and transportation. This additional decision-support facility is now highly critical.”

Thus, combining an optimisation engine with a sophisticated trading system provides a more complete and performance driven view of the business overall.

The traditional ‘silo’ approach to power and gas trading is no longer sufficient. A good example is that, in many companies, the physical planning department is not linked to the trading area/decision making process. What is required, therefore, is to marry classical business activities with real-time ETRM/CTRM systems, utilising optimisation techniques to provide a complete Energy Scenario Management architecture (Figure 2).

In such a configuration, all the elements of the business are brought together making information available – and meaningful – in this complex environment. In this way energy traders/managers can get a comprehensive understanding of the business, reducing the overall risk of the company’s combined processes. All the different elements of the business are brought

together, with all data in one place, giving management the ability to see the true picture of risk and model scenarios visibly in real-time. This overcomes one of the major gaps that currently exist in the risk management process at many firms – the lack of communication between risk groups and the senior management team, which means substantial amounts of resources are wasted implementing models and creating reports without actionable information.

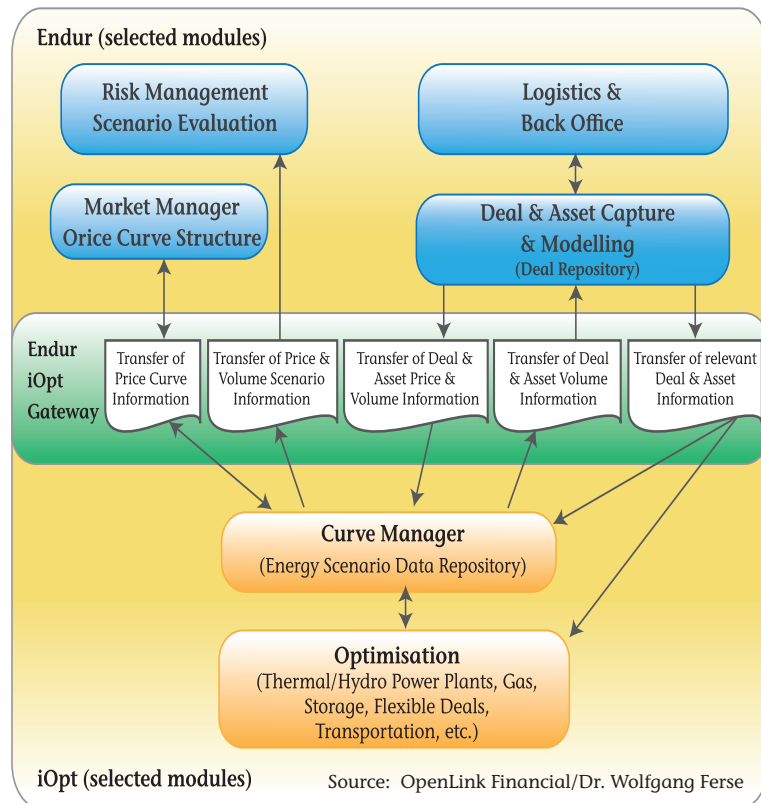
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Internal calculations by OpenLink suggest that with the adoption of its integrated solution, a relatively small and simple gas portfolio, for example, could increase profits by around half a percentage point, while for a more complex €1 billion diversified energy portfolio, the figure could amount to several percentage points.

What makes the OpenLink solution different from other vendor offerings is that, in recognition of the inherent uncertainty of forecasting due to extreme volatility, it can

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Figure 3: Information & Data Flow Between Modules



- The Endur - iOPT Gateway is the integration hub between Endur and iOPT
- All information is captured once only – no operational risk
- Automated creation / update of optimisation model components & scenario elements in iOPT based on Endur Deal & Asset changes
- Automated transfer of Scenario information & Optimisation results from iOPT to Endur

Source: OpenLink Financial/Dr. Wolfgang Ferse

link together simulation with optimisation results so that a different optimisation scenario can be embedded within each valuation run. Financial and physical contracts, different commodities and markets, together with storage and assets, are all captured within the system.

A paradigm shift is needed in the way many energy companies integrate their businesses. Risk groups must realign their resources and put greater emphasis on implementing combined risk and scenario models that can serve as decision-support tools to design and evaluate hedging and trading strategies based on potential variability of cashflow, earnings and other metrics. In this way traders/managers gain a deeper understanding of current sensitivities in their book. Sensitivity analyses could, for example, be used to verify how long the planned use of particular resources remains optimal given changes in pricing at hubs, or in other markets.

Dynamic risk modelling is gaining growing acceptance in the marketplace

New advances in financial engineering and computational finance such as Least Squares Monte Carlo and Dynamic Programming allow for the widespread use of dynamic risk simulation solutions in energy firms. However, it is crucial that companies have the systems and risk management framework in place to implement and make sense of them.

Another important and growing area where valuation and risk models can improve the information to traders/managers is in financial reporting where new statements will require companies to take a more active market perspective.

Island solutions are out and energy market participants need to employ a fully integrated approach to their risk management requirements, particularly in view of additional regulation and reporting requirement coming their way. Dynamic risk modelling is gaining growing acceptance in the marketplace,

especially in the optimisation of physical assets like storage facilities, pipelines, and power plants. Therefore, it is expected that many energy firms will be gradually replacing their current risk and valuation models and ETRM/CTRM systems.

Energy risk management has been based on unrealistic assumptions regarding portfolio and market behaviour. Many ETRM systems have an inherent lack of integration to allow their users to fully optimise (using dynamic risk simulation-based tools etc.) the company's true position. OpenLink have found a solution to the problem through its iOPT modules and Smart ETRM strategy, providing forecasting and optimisation capabilities as an extension to the Endur ETRM platform. ■

Guy Isherwood is Editor of WorldPower and *Commodities Now* magazine.

OpenLink's energy platform – Endur – is a front to back-office solution for trading, risk management and operations in commodity markets. Built on OpenLink's NGX Framework, Endur provides a comprehensive solution serving markets in electricity, natural gas and natural gas liquids, crude oil and refined products, precious and base metals, coal, weather, derivatives, emission, bandwidth, softs and FX.

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