OTRM and Agentic AI: A Perfect Match

How to control risk and optimize revenue in the energy and commodities ecosystem

Executive summary

Operations in the energy and commodities sectors are defined by complex, long-dated and highly dependent processes governed by dense contracts that embed future obligations, triggers and decision points. In operational terms, handling and monitoring this complex and highly event-driven set of processes (which often have relatively well-defined evaluation conditions) can be a major challenge. But, Chartis argues, these conditions and processes are perfect candidates for automation using agentic artificial intelligence (AI).

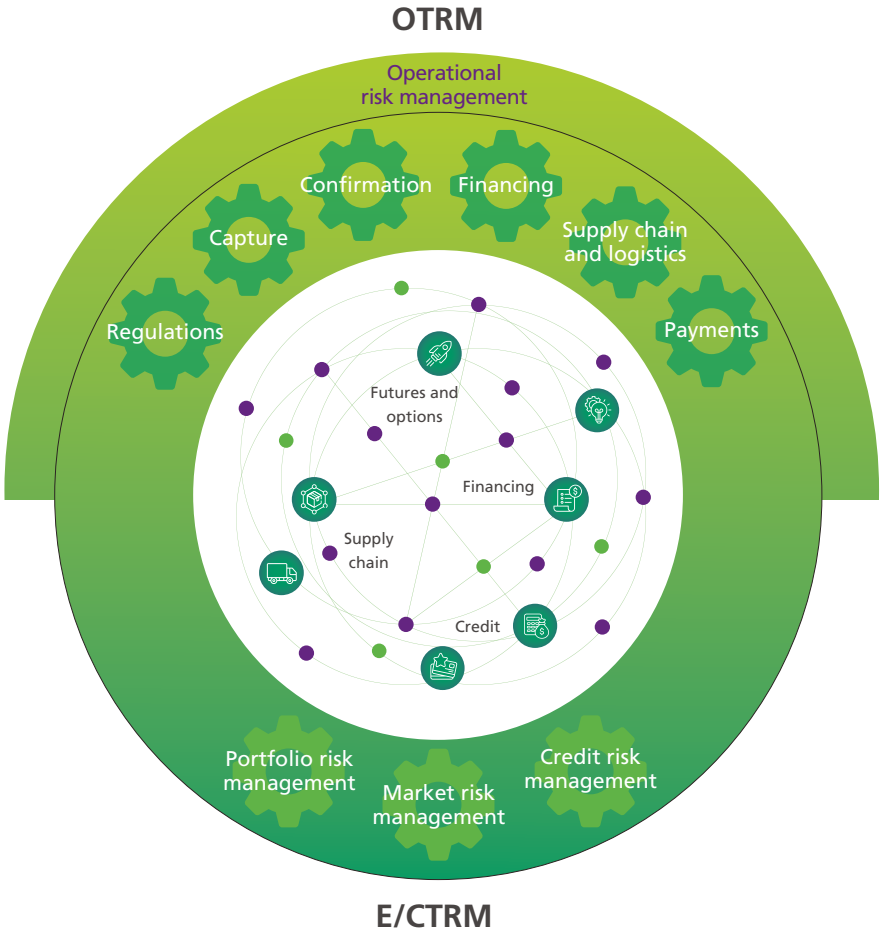
Chartis believes that it is vital for firms in the energy and commodities ecosystem to build operations and trading risk management (OTRM) frameworks – using agentic AI. OTRM frameworks can manage, control and mitigate errors in the entire energy and commodities operational cycle, by supporting automation in several key areas. These include contract management, trade capture and confirmation, inventory tracking, invoicing and compliance and counterparty checks. By operating in this way, an OTRM framework can create both risk and revenue benefits.

This paper introduces and defines the concept of OTRM, which – we will argue – is not just an additional operational component of energy trading and risk management (ETRM) and commodity trading and risk management (CTRM) systems. Rather, driven by agentic AI, it is a parallel operational intelligence and automation layer to the E/CTRM cycle that currently handles business, operational and transactional risk (see Figure 1 on page 2). Moreover, it can also address revenue leakage and optimize commercial opportunities.

Indeed, we argue that a shift to an OTRM framework can enable firms to achieve a variety of operational and commercial benefits, including automation of key process areas, risk reduction, better payment terms, reduced revenue leakage and fewer penalties. Intelligent automation can reveal many opportunities for revenue-leakage control and margin enhancement currently locked in areas such as contract terms and conditions (T&Cs), logistics requirements, and the complex operational processes required to support a variety of third-party expenses.

Chartis believes that by bringing precision, automation and comprehensive visibility to these areas, OTRM frameworks can, in essence, serve as the commercial operating system of energy and commodity trading organizations.

Figure 1: OTRM and E/CTRM – interconnected parallel frameworks for managing risk in complex energy and commodities markets



Source: Chartis Research

Context: structural complexity

The overarching operational lifecycle for energy and commodities is extremely complicated, for several reasons:

- **Complex, multistage, highly variable and intertwined processes**. Commodity trading is, in essence, the process of transforming commodities (such as converting the form of a commodity or changing its geographical location). To create value, firms must optimize these varied transformations – an inherently dynamic process. Each commodity cluster (such as networked gas, liquefied natural gas [LNG], oil, refinery products, softs, metals or agricultural commodities) has a distinct process, with a unique pool of events, complex contracts and varied logistics requirements. Keeping track of the sequence of activities that need to be performed in each context is often challenging, and gaps in execution can create operational, market and credit risks, as well as potential loss of revenue.

- **Long-dated, multi-dimensional contracts**. Physical contracts have intricate T&Cs, a wide range of execution criteria and elements that may have to be executed over long periods of time. Typical LNG offtake agreements, for instance, can cover periods as long as 15 years. Power purchase agreements can be anywhere between 10 and 20 years long, and have very specific terms that apply at various parts of the overarching contract lifecycle.

- **Event-driven execution**. Contracts typically have embedded terms that drive future actions (such as contacting a warehouse and determining the total available assets it contains, whether the available assets meet certain critical criteria, and whether the price environment surrounding those assets is not only appropriate but also meets the original T&Cs). Once those events trigger movement of the asset into a tolling operation, the details of the tolling operation become active. All of these are pre-negotiated event structures, and issues can arise around embedded contractual optionality, ambiguity in how terms are interpreted, and context-dependent triggers.

- **Geographical-driven execution**. Offtake or downtake may be present in different warehouses across the world, or ownership rights and controlling stakes in shipped assets may change. These may be event-driven shifts, based on changes in price or material conditions.

- **Asset class variability**. The T&Cs embedded in contracts for each individual asset class can vary considerably. Differences can arise even within individual asset classes, and at every stage of the lifecycle there are complex contracts that determine the offtake, consumption, storage and logistics of each of these products.

Complexity creates risk-related challenges and revenue exposure

Because of these factors, contract management (and, more importantly, the management of the events and actions determined in the contract terms) can be challenging (see Figure 2 on page 4). Handling this complexity using manual processes is exceedingly difficult for several reasons, including the level of detail in contracts, limits on human capacity and time, and the variability in contract language that requires contextual understanding. This is true even if the processes have a software 'wrapper' that surrounds the manual management of documents, events and the event lifecycle.

Poor management of logistics (demurrage), contracts (such as embedded pricing and delivery optionality) and third-party expenses (such as shipping and insurance) can result in substantial revenue leakage. Common to all these activities is a complex sequence of time- and context-dependent contingent events that must be executed. In commodity trading, therefore, third-party expenses and the dynamics of logistics are not just overheads, they are critical factors that influence profitability – and they can be controlled.

Tackling the challenge: OTRM

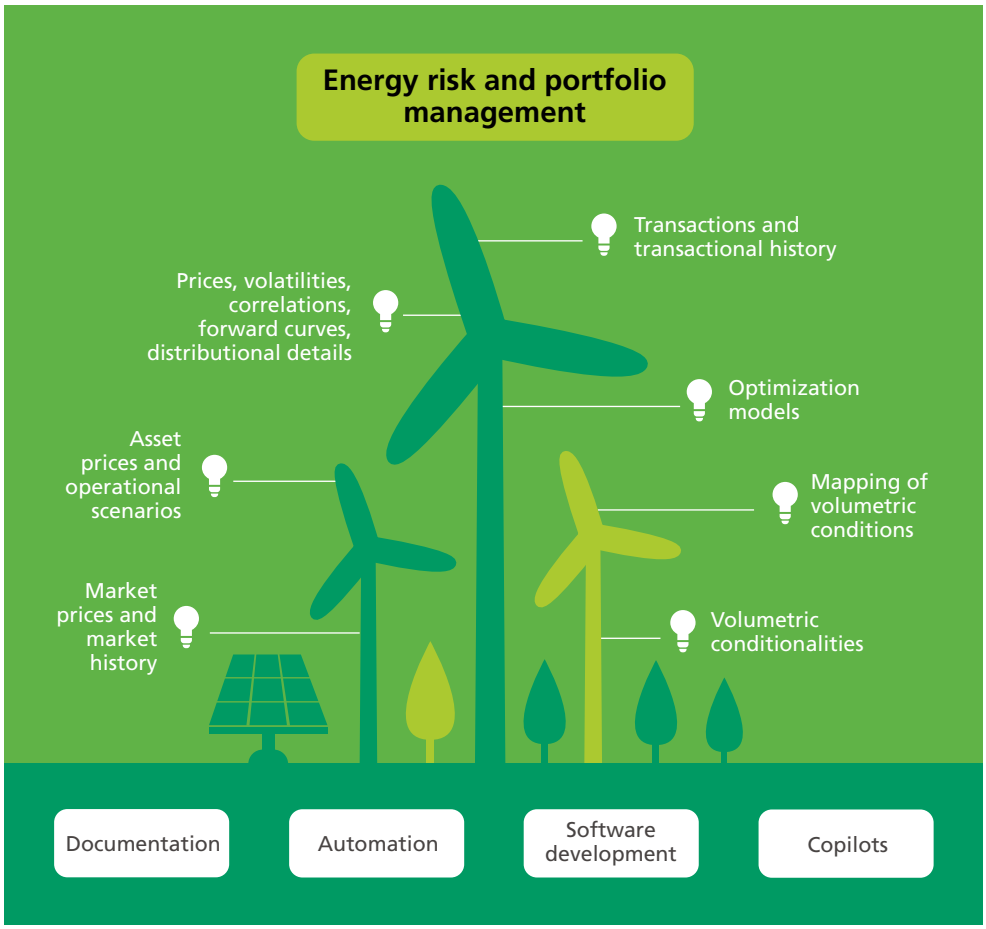
To address this complexity, Chartis proposes the operations and trading risk management (OTRM) framework. In essence, this examines all the events embedded in transactional documentation, extracts them efficiently, ensures they are executed appropriately and according to their specific contexts, and integrates them within the core E/CTRM system.

In other words, an OTRM framework surrounds, integrates with and runs parallel to the core E/CTRM system. It ensures that commodities and procurement activities can be handled across the entire lifecycle with low risk and a high degree of control and operating precision.

The agentic component

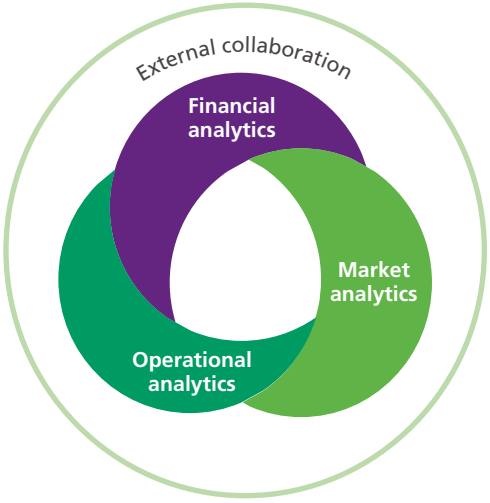
Chartis believes that the mapping of events is an activity highly suited to an agentic AI framework. Technically, all processes and tasks are suited to agentic AI: as the capabilities of advanced AI tools continue to evolve, the general view is that we are now at a point in the technology cycle in which many business functions and processes can become highly automated.

Figure 2: Complex event sequences are embedded in commodity and energy contracts



- FOW
- Trading and hedging strategy
- Credit terms and conditions
- Collateral and margin terms
- Derivatives economics
- Supply chain and logistics

- Storage optimization
- Pipeline optimization
- Contract optimization (PPA)
- Load forecasting
- Transport analytics
- Product optimization and analytics (including attribution)



- Portfolio optimization
- Integrated cross-asset strategy

- P&L
- Accounting and tax
- Contract valuation
- Trading strategy
- Trading strategy with operational constraints (including all illiquid products)

Source: Chartis Research

Nevertheless, while there have indeed been dramatic transformations in AI technology, we argue that firms should consider two other critical dimensions going forward:

- As they look to automate and control activities, firms should think in terms of tasks, events and actions. Equally, they must have a framework that brings a degree of control, security and industrialization to the process environment. A technology environment that achieves this reduces risk, enhances transparency and improves business outcomes.

- Operational environments with well-defined events, and/or those that can be redefined as a set of discrete tasks with well-defined end points, are more amenable to effective agentic automation. It is vital that firms use appropriate tools to enable this process, ensuring efficient controls and strong security supported by an appropriate data architecture.

Opening the 'event box'

To be truly effective, OTRM needs to run across the entire lifecycle of transactions and risk management systems. It is important, therefore, to consider the documents that govern the management, transportation, distribution, processing and warehousing of energy and commodity assets throughout their lifecycle.

These documents are a record of the event ecosystem that must be executed over the transactional lifecycle. They provide the bedrock T&Cs that will regulate the management of events. Instead of thinking of documents as merely text on a page, it is perhaps better to view them as containers or 'boxes' for a range of events that:

- Must occur at various points in time.

- Must be controlled appropriately – from matching reconciliation to ensuring that appropriate actions are taken at specific points in time, and that the entire transaction is completed.

By extracting events and mapping them appropriately into an agentic framework, firms can 'open the event box'. This allows them to respond to external events, and manage events effectively over the entire trading lifecycle and throughout the trading ecosystem. And because the OTRM framework exists in the physical and operating environment and works in parallel with the E/CTRM system, it can be clearly and consistently synchronized and reconciled with that system.

The benefits of OTRM

Clearly agentic frameworks are well-suited to the problems and overall market structure outlined above, notably the dynamic sequence of long-lasting potential events triggered by varying context (see Figure 3 on page 6) – a framework common to all commodity classes.

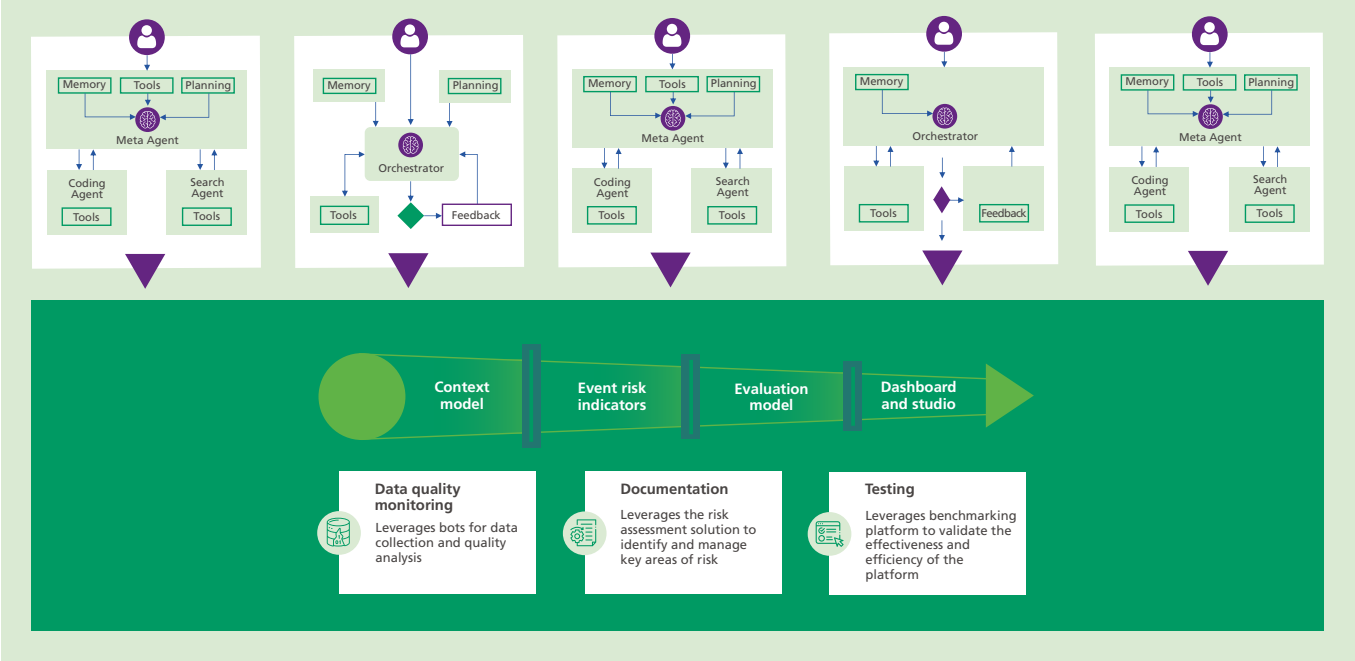
OTRM can offer several operational and commercial advantages:

- Protecting and optimizing revenue.

- Reducing and controlling risk.

- Automating operational workflows and tasks.

Figure 3: The OTRM platform leverages agentic AI to handle complex embedded event sequences



Source: Chartis Research

Revenue optimization

By enabling firms to better understand and act on the terms in contracts and agreements at the speed of the market, a shift to an OTRM framework can create important commercial outcomes, helping firms to:

- Reduce demurrage, penalties and leakage.
- Benchmark business processes.
- Identify and act on contractual options (in terms of timing, delivery and pricing).
- Optimize outcomes in response to disruptions.
- Capture early payment discounts or better payment terms.
- Surface overlooked opportunities (in operational data, for example).

Ultimately, by protecting and optimizing the management of commercial T&Cs, protecting and optimizing revenue and preventing leakages, the OTRM framework optimizes the operations of the trading business. This can enable the strategic repositioning of key elements (such as new counterparties, new logistics strategies or a restructuring of offtake strategy) into successful commercial outcomes.

The risk factor: control and management

A key advantage of agentic AI is that it provides visibility of risk at a granular level. As agentic tools create an event list for the OTRM framework to process and manage, they can spot the gaps in each type of event, and the risks that each event could cause. By looking at the entire volume of transactions, firms can add individual process-linked event risk to the total number of transactions, to extract and generate the overall risk level that needs to be managed. With efficient data transformation, and data logs that begin with trade capture and move through trade confirmation and internal reconciliation, firms can ensure that operational risk is tightly controlled.

Based on a careful analysis of a wide variety of institutional perspectives,[1] Chartis believes that operational risk is a large component of overall risk in energy and commodities processes. By managing this effectively with an agentic AI framework, we believe that firms can significantly reduce risk at every stage of an implementation. Notably, the biggest gains in efficiency, commercial effectiveness and operational control often occur during periods of disruption, volatility and market stress.

Conclusion and recommendations

When applying agentic AI, many firms target automation at open-ended tasks and issues, rather than separating an overarching process into a series of well-defined tasks. Energy and commodities, for all their complexity, are fundamentally structured in a way that makes them suited to agentic AI frameworks. Unlike those in many other sectors, energy and commodities operations are rule-driven and event-based by design, running on clearly defined triggers, deterministic outcomes and explicit contractual boundaries. They employ well-defined constructs with well-defined events, with highly specific boundaries between the failure and success of a query. AI and agents make it possible to handle the variability that exists within these structured processes (such as unstructured data, different document formats and variability in contractual language), which, until now, had been a significant barrier to the progress of automation in this sector.

Crucially, periods of volatility (such as the world is experiencing at present) highlight and magnify the need for firms to develop low-touch, highly controlled frameworks, infrastructure and capabilities to handle operational event cycles.

Chartis believes that this level of event management is only possible if firms have an efficient environment – perhaps a studio – that breaks processes into their constituent tasks and provides dashboards that display open options, complete/incomplete sequences and complete/incomplete environments, as well as the exposures that may emerge from incomplete tasks.

Firms should view OTRM infrastructure as an 'operational companion' to their E/CTRM platforms, and ensure that both systems work together to:

- Handle the wide variety of contingent events that energy and commodity companies are exposed to throughout the contract lifecycle.
- Optimize business processes and revenue management.
- Reduce risk exposure and revenue leakage.

[1] *Because there is significant variation across commodities, not only in process and contract structure but also in the types of trading firms and strategies involved, Chartis' analysis considers risks as optionalities embedded in contracts, and applies a set of scenarios to standard business processes for a variety of commodities.*