

Leveraging Data

Commodity Data Management: Today's commodity trading organizations are overwhelmed and under increasing pressure to process, understand and act upon a deluge of external and internal information flows that provide the life-blood of the company's success or failure.

By Richard Quigley

COMPETITIVE PRESSURES, INCREASED regulatory compliance, tighter profit margins, and heightened market and credit risk have further compounded the already demanding commodity business environment, evolving the organisation into a risk-centric business operation – thus creating the need for a new level of information maturity and the transformation into a more data responsive entity.

without disruption is even harder. The constant and growing stream of 24/7 data ensures that maintenance becomes difficult to manage and improvement can become a distant goal. And this before anyone has actually analysed and acted upon the data.

In order to capitalise on the total data universe and create a more responsive data infrastructure, a solid architectural framework is required – the deployment of robust applications and reliable technology to help create the flexible and scalable environment to realise the full value of data assets.

Demanding Data

The pressures of managing large volumes of data in a demanding business environment are not new in the energy and commodity markets. For example, deregulation in the European electricity industry saw a paradigm shift in the practices, processes and business strategies which generated masses of new data. This new business landscape was unrecognisable from the regulated markets and necessitated a new technology infrastructure in which to operate – advancing the energy / commodity trading and risk management (ETRM/CTRM) IT sector we have today.

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Such temporal business shifts require a more holistic approach to data management, rather than a 'point solution'. Ultimately, practitioners need to ensure that today's technology can operate in tomorrow's environment. However, it is not uncommon to still observe large corporations managing their daily business in Excel. Whilst spreadsheets are flexible and useful in certain applications (when properly updated), the time has passed where a standalone workbook can be considered robust enough to bet the farm on.

Before any data management change program can be initiated and its tangible benefits realised, there are many hurdles to overcome. One of the less quantifiable but no-less important obstacle



Taking this flood of disparate data and constantly updating operational processes to flatten, map, integrate, validate and distribute it to create a useful result (whilst keeping alert for ever faster external market changes to ensure competitive advantage) is no easy feat. Performing this task cost effectively, consistently, quickly, and

is surmounting the cultural acceptance of data being viewed as a by-product or support function and a cost to the organisation. Put simply, *Data is, and should be, valued as a strategic asset and the essential foundation of corporate performance. Data warrants being treated like any asset on the balance sheet, requiring investment, maintenance and measurement.*

For some companies, this has involved appointment of C level responsibility with the creation of a Chief Data Officer (CDO) or Chief Data Steward (CDS). They are primarily responsible for championing the benefits across the organisation of the strategic value of data and it's importance as a business asset and revenue driver, as well as managing and executing data streams, technology, governance standards and strategy.

Whilst not all companies require, or can afford, such an individual, even this cultural realisation can have profound effects on the organisations review of the asset hierarchy, leading to a positive investment focus on data and a realisation of the upside.

The Agile Data Management Platform

The upside is not a one-size-fits-all solution and will benefit different organisations in different ways offering a broad range of strategic and operational benefits, depending on the focus and business priorities of each entity. The common thread is to ensure operational excellence, increased agility and a smarter use of the data assets.

Getting and understanding the right architectural 'fit' for each organisation requires some insight into their real business activities, which will help to reveal the overall data landscape. Some examples of the data types are noted in Table 1. Each group may need to be treated differently in the database with

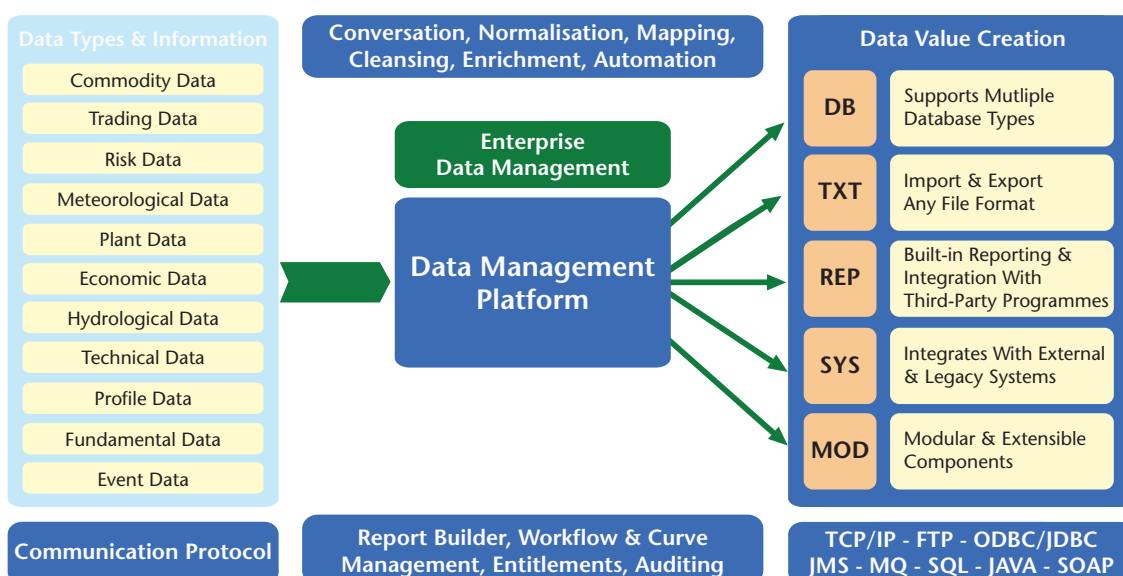
Table 1: Typical Commodity Trading Organisation Data Types	
Data Group Type	Data Examples
Commodity Data	Prices, Volatilities and Indexes
Trading Data	Transactions, Bid/Offers, Counterparty
Risk Data	VaR, M-t-M, Reports
Metrological Data	Temperature, Precipitation, Wind
Economic Data	Inflation, GDP, Interest Rates
Plant Data	Generation, Emissions, Fuel Consumption
Hydrological Data	Water Levels, Flow Rates, Dam Levels
Technical Data	Installed Capacity, Storage, Efficiency
Profile Data	Meter Consumption, Rate Card, Generic Profiles
Fundamental Data	Stock levels, Import/Export, Drilling Activity
Event Data	News, Outage, Stochastics, Extraordinary

consideration to the overall data management architecture.

A modular and scalable data management architecture can accommodate these different data types, creating the 'digital data backbone' fit-for-purpose for a commodity trading organisation that is at the centre of the enterprise decision making processes.

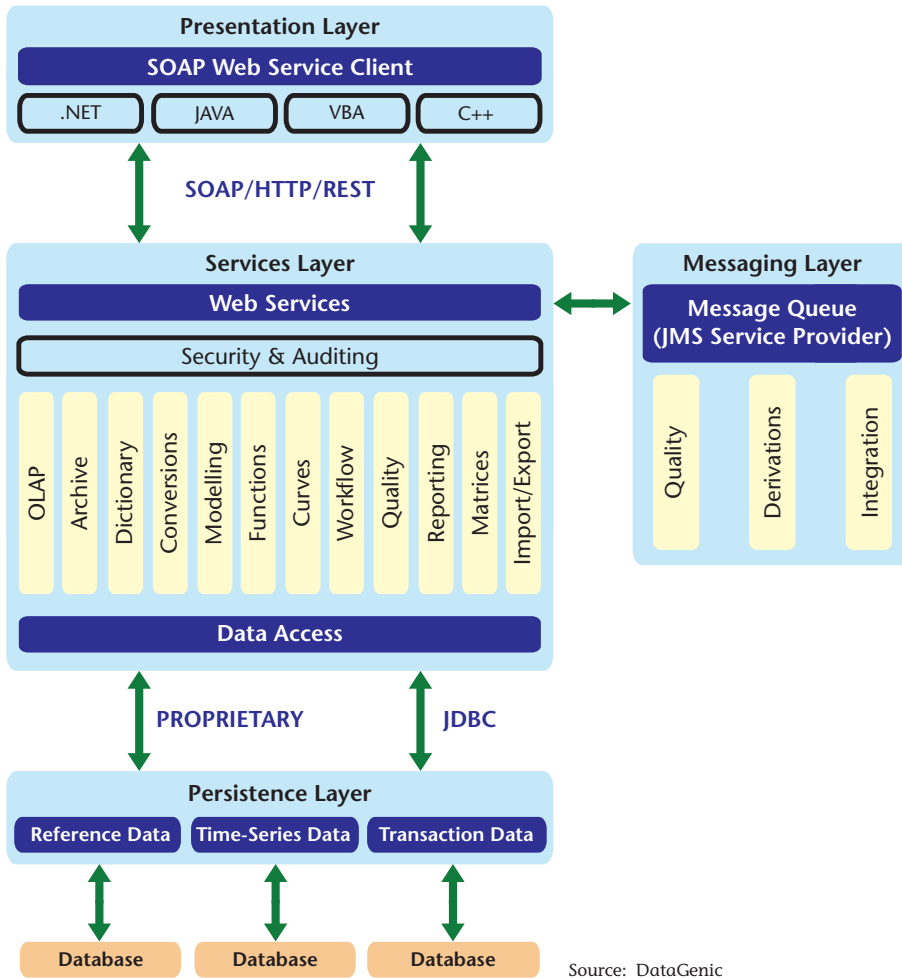
Figure 1 provides an overview of a typical functional architecture, highlighting the different data class streams including intra-day/end-of-day market data, real-time data, and internal data associated with Table 1. Theoretically, each data type may be technically different in nature with a mixture of reference/

Figure 1: Functional Architecture



Source: DataGenic

Figure 2: Agile Data Management High Level Architecture



Source: DataGenic

meta data, time-series, and transactional data and may require different treatment depending on the volumes involved.

In a recent study by CommodityPoint: *Data Management Solutions - Market Research and Report*, commodity trading clients were surveyed on a range of subjects, including the frequency of the

... due consideration must be given to the data management architecture

database updates. Over 60% of the respondents indicated that the data management solution was updating intra-day. This included hourly, sub-hourly, and tick data. Interestingly, although clients are storing the deals-done, over 75% of those clients were also capturing tick data, stored

for future analyses and back testing strategies. Although the survey was limited to 57 responses, these database storage requirements are becoming more prevalent for larger organisations and those using algorithmic trading practices.

Such data – in the course of its life-cycle – requires rigorous validation methods to ensure the highest quality and integrity. Furthermore, corporate and legislative compliance regulation mandates that all data used in the course of trading and risk management activities should be secure, offering full transparency and providing ‘traceability’ through the entire data life-cycle. This all sounds great, but in practice can seem utopian in nature for many clients that have legacy in-systems, developed with rigid data structures, monolithic applications and a single database model.

It is interesting to note that currently in Europe, there is an above average quota of RFI/RFP requests in the market for replacement market/central database platforms that are, in the main, being orchestrated by the Risk Department – something that was uncommon even three years ago. Largely, there is a more focused awareness of the opportunity cost and non market-compliance associated with remaining with their incumbent, fractious, sometimes expensive and not-

fit-for-purpose data information platforms.

Algorithmic’s recent paper (May 2011) *Data management for risk management: the importance of data-oriented systems* advocates a centralised approach to data management, arguing that clients should have, “... a data-oriented risk management system with integrated data architecture” to help minimise operational risk whilst spending more time on, “... adding value to the business across all aspects of enterprise risk management”. Although risk ‘point-solutions’ exist that provide a price support environment (validation and exception reporting of data anomalies) prior to acceptance into the CTRM system, they offer restricted value to the organisation, albeit targeted.

To ensure that a more agile, holistic and centralised approach to data management is achieved, due consideration must be given to the data management architecture. This not only underpins the solution, but with careful selection and deployment, can offer the flexibility, scalability and performance that is necessary to cope with the increased complexity of the data and it’s subsequent lifecycle. Furthermore, empirical evidence suggests that companies can achieve a lower total cost of ownership, reduced capital costs, and improved productivity with this centralised approach.

Getting The Architecture Right

Figure 2 suggests the architectural framework to provide the flexibility for managing all types of data in an enterprise environment. Using industry leading development and integration technologies – and agnostic to the database system, application server and operating system – the deployment and use of such a framework will no doubt offer long-term benefits.

The first tier (Presentation) is the user interface (client application). The client application communicates with the Application Server via the web service.

The middle tier (Services) provides the business logic with specialised components covering security, dictionary functions, time-series, analytics and reporting. This middle tier should use and harness the power of standard J2EE application servers such as Oracle BEA Weblogic or JBoss that can be scaled to provide data loading and access for thousands of processes and users.

The third tier (persistence) is the data management (server) component. It consists of three data adapters: one for the storage of meta-data and reference data; one for time-series, vector and matrix data; and lastly one for transactional data. This hybrid approach maximises the ability to optimise performance, scalability and adaptability.

It is worth noting that due to the cost of databases, the data management component should be agnostic to the third-party vendor, thereby ensuring clients can use, for example, their existing Oracle, Microsoft SQL Server or even MySQL.

For large trading companies that typically work the Asian, European and US markets, it is not uncommon to have three major databases located in each region, each managed regionally, with bespoke data validation rules and processes. Although a centralised data department and location may be one strategy it is not necessary in order to still leverage all the corporate information in a unified view, whilst complying with the corporate database management and processes.

Data Federation is the key here. Data federation provides an organization with the ability to aggregate data from disparate sources, wherever they are located and however they are stored. A virtual database is then created with only the information about the actual data and its location. The data itself is left in one place, saving the inconvenience of the creation and management of a new centralised database, synchronising the databases or even copying data as and when required. It is always available to the client offering a seamless view of the data universe. Not all database platforms allow for this, but it's worth noting. It can be very cost-effective, and de-risk part of any data consolidation project.

Conclusion

It is without doubt, that the organisation which acknowledges and invests in one of the most underrated of corporate assets – data – can have an edge in any competitive marketplace. The degree of advantage is a function of many things including: data responsiveness; data timing; data integrity; data consolidation (views); data relevance; data universe, data operator and execution of the corporate and operational actions. Achieving

excellence in this area is one of the continual challenges of any organisation. However, with vision, a clear mandate, tight initial planning and goals, the correct financial resources and buy-in at the corporate level – they are part of the contribution to the success of any projects.

As noted in the summary of *CommodityPoint* study, it is heartening to know that “data management is coming of age in the commodities trading and risk management business function”. No longer can a multinational corporation ‘get-by’ in an excel-based environment, or spend millions on the deployment of a new CTRM system, without the need for a careful and thorough review of their data requirements ... not just for the functioning of the CTRM but extending its reach throughout the whole organisation. This will not just ensure the integrity of the risk numbers generated, but offer a more strategic view on data management with the potential to leverage rich and unrealised benefits from this strategic asset.

“data management is coming of age in the commodities trading and risk management business function”

Achieving this new level of information maturity and a more data responsive organisation requires a technical, functional and operational review of the business, which will dictate the architecture and business roadmap to follow.

It doesn't have to be a ‘big bang’ approach to solving all the data problems. Small incremental improvements can make a difference and ultimately set you on the path to enhanced decision making, operational excellence, with a positive influence on the bottom line. •

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