What's up front isn't all that counts

Besides greater price transparency and market liquidity, automated on-line energy trading also promises greater efficiency and volume than traditional, manual methods. But an energy company will never maximize those gains unless it extends the flow of deal data received from on-line exchanges beyond its front office to its back- and mid-office systems

By Jill Feblowitz

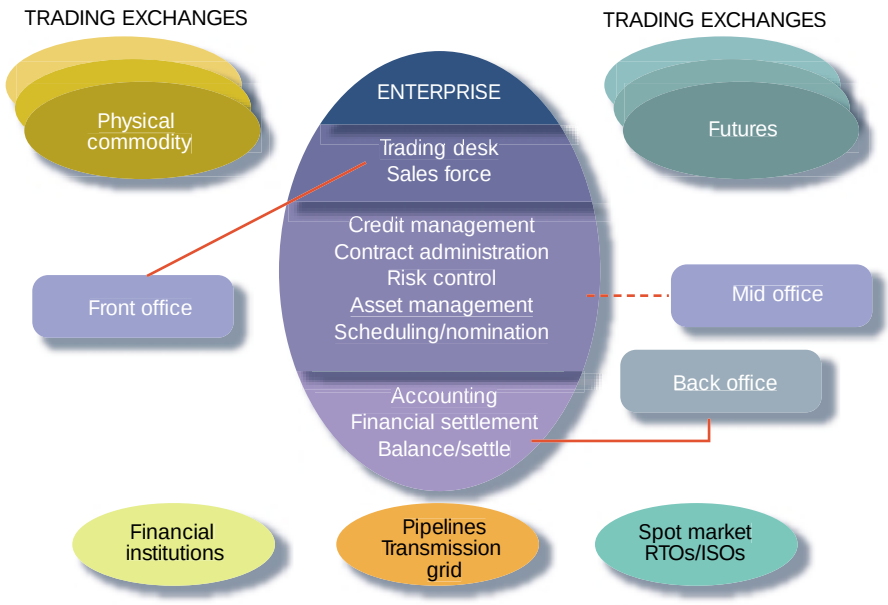
On-line energy trading is exploding. Nationwide, the volume of trading on exchanges devoted primarily to trading of financial and physical energy commodities grew 700% from 1999 to 2000; its value now stands at approximately $200 billion. AMR Research, Boston, estimates that by 2005, the value of energy traded on line will reach $2.3 trillion.

These symbolic measures of booming activity say nothing about its practical consequences for individual energy companies, however. When the trading operation of an energy company does only a few hundred trades per month, the handling of deal data can be done manually. But when it does thousands of deals, the process becomes a nightmare for its middle and back offices.

Overworked data-entry clerks are the least of the problem. The value of the average natural gas or electricity trade executed on the Internet is in the $500,000 to $850,000 range. So a company takes a tremendous risk every time it fails to fully understand its net position or fails to deliver on a deal.

Another consequence of the explosion in on-line energy trading is that everyone is doing it. As more companies do their deals in cyberspace, the pressure to be more efficient at it than the competition rises. Being more efficient means being able to transact more deals at a lower cost per deal. For an energy company, what that demands is that it maximize the productivity

1. Enterprise view of integration



potential inherent in using on-line exchanges to automate trading.

If electronic data about deals only penetrate as far as the front office—where the traders are—the supporting cast in the middle and back offices have to record and process those data manually. That's neither efficient nor cost-effective. Estimates are that the cost of processing deal data is reduced by 30 to 40% when a company's back- and middle-office computer systems are fully integrated with those of on-line exchanges.

What are the benefits of such "full" integration? At energy trading firms and operations, it means that information about deals can flow from the exchange all the way through to the back office, where it can used for settlement, and the mid-office, where its numbers can be crunched by risk-management, commodity-delivery, and pipeline nomination or transmission bidding and scheduling applications (Fig. 1). At energy retailers that have integrated fully, data about deals can flow from the wholesale to the retail desk.

In the back office: STP

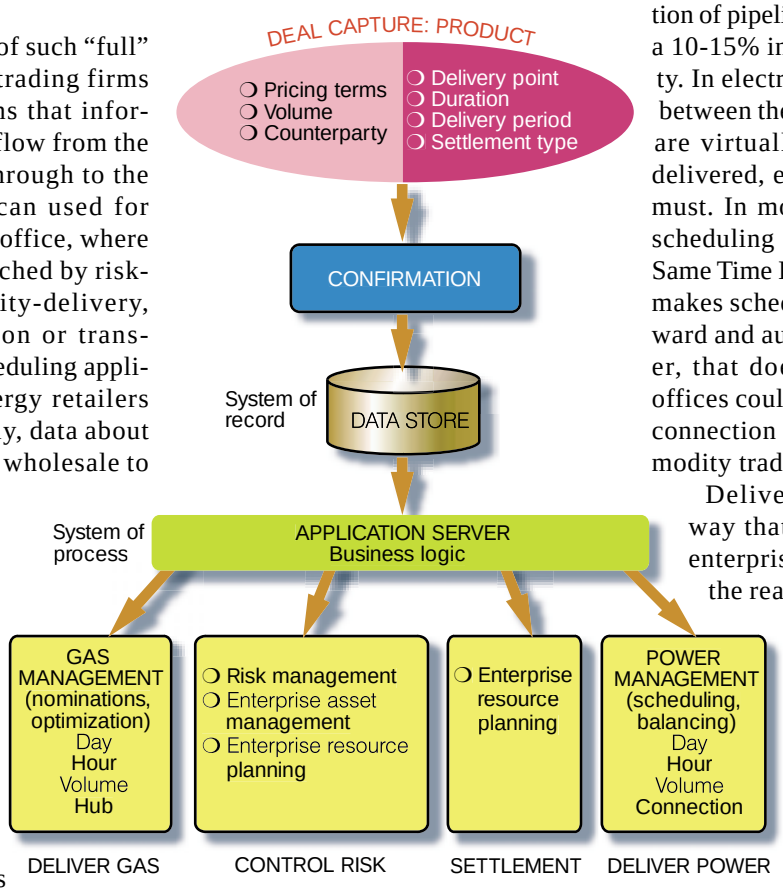
Another term for end-to-end integration is straight-through processing (STP), which eliminates duplication of effort, reduces compound errors caused by multiple points of data entry, and improves reporting capabilities (GLOBAL ENERGY BUSINESS, May/June 2001, p. 27).

Most energy companies still have multiple points of entry into their trading, risk management, settlement, and nomination systems, each of which interfaces with the others. Microsoft Excel spreadsheets are the most popular tool for capturing deals. But some energy companies are using what is loosely referred to as STP to send deal information to enterprise resource planning (ERP) systems for settlement.

Energy companies are beginning to turn to information portals as a way to achieve STP. A portal provides personalized, consistent access to information; the user uses the same window to retrieve information from internal systems as well as external sources. Energy trading portals make the look through that window a vertical one. They provide role-based access to external information—such as market prices, weather, and transmission pricing and availability, as well as to internal data—such as trading status.

Portals can also play a role in deal capture. For example, Tulsa-based Oneok, Inc. uses Altra Energy Technologies' E-Solutions, and Epicentric, to power its portal. In effect, it links traders at one company with each other, with traders and buyers elsewhere, and even with natural gas pipeline schedulers. Another example is Houston-based Reliant Energy, whose portal uses Tibco's ActiveEnterprise enterprise application integration (EAI) tool.

2. Straight-through processing in the energy industry



In the middle office: Real-time data

Making a deal is only half the battle. If delivery of the physical commodity cannot be made, the energy trader can lose a bundle. At one company, three out of five deals made by traders were not consummated because of lack of integration from deal capture to scheduling.

Where accounting and financial settlement tend to be generic, scheduling and nominations are commodity-specific. In natural gas, optimization of pipeline nominations can deliver a 10-15% increase in deal profitability. In electricity, given the difference between the way that blocks of power are virtually traded and physically delivered, end-to-end integration is a must. In most middle offices, where scheduling is done, the Open Access Same Time Information System (Oasis) makes scheduling a fairly straightforward and automated process. However, that doesn't mean most middle offices couldn't benefit from a tighter connection with the company's commodity trading activities.

Delivering real-time data in a way that they can be used by the enterprise to manage risk is where the real value lies. Downloading the data from a deal electronically is simple but inefficient. The next best thing is connecting with a trading exchange for real-time delivery of data to a data repository, where normalized data can be viewed by traders or reported out. However, the data repository idea won't work without the business logic to make deal capture information usable by other systems. For example, while exchange data arrive on a product basis—power traded in blocks that may be on- or off-peak—scheduling, nomination, and physical spot market data must be transformed to conform to hourly periods (Fig. 2).

There's a big obstacle to the use of real-time information, however: Most risk management applications cannot readily handle it. Reports are

that many are getting bogged down with real-time data. That's because they were designed to take batch data on a daily, weekly, or monthly basis for mark-to-market or value-at-risk (VaR) analysis—not a constant stream of data pushed out from an on-line exchange.

Risk management application vendors KWI and Caminus are beginning to address this problem. Primo/Sungard has a product that uses the extensible markup language (XML) to represent deals. And Kiodex plans to release a Java application called Risk Workbench that delivers—over the Internet—risk management analytics for natural gas, crude oil, and refined products. Kiodex is also building the trade-matching engine for the yet-to-be-launched eNymex exchange.

Would standards help?

Could some data normalization issues be solved by standards? Standardization is a long way off and the market will, no doubt, establish a de facto standard before bodies like the Energy Trading Standards Group (ETSG) settle on protocols. Risk management application vendors Triple Point Technology, OpenLink, and Caminus—as well as independent exchange HoustonStreet—support the work of the ETSG, which has been slow-moving. Standards for nominations and scheduling are more advanced, with the Gas Industry Standards Board (GISB) being the clear leader for gas.

Compared to the cost of building a private exchange, the cost of accommodating different standards is low. Building basic connectors for deal capture delivered to a data store or repository is fairly straightforward. Assuming that there is a common bus, additional trading exchanges may be added by building new connectors.

Connecting takes typically three months and costs less than $100,000 for an outside contractor, with monthly maintenance of $1,000—although exchanges with more robust confirmations may have to pay up to

Exchange business models

The promise of liquidity is what attracts traders to commodity exchanges of all types.

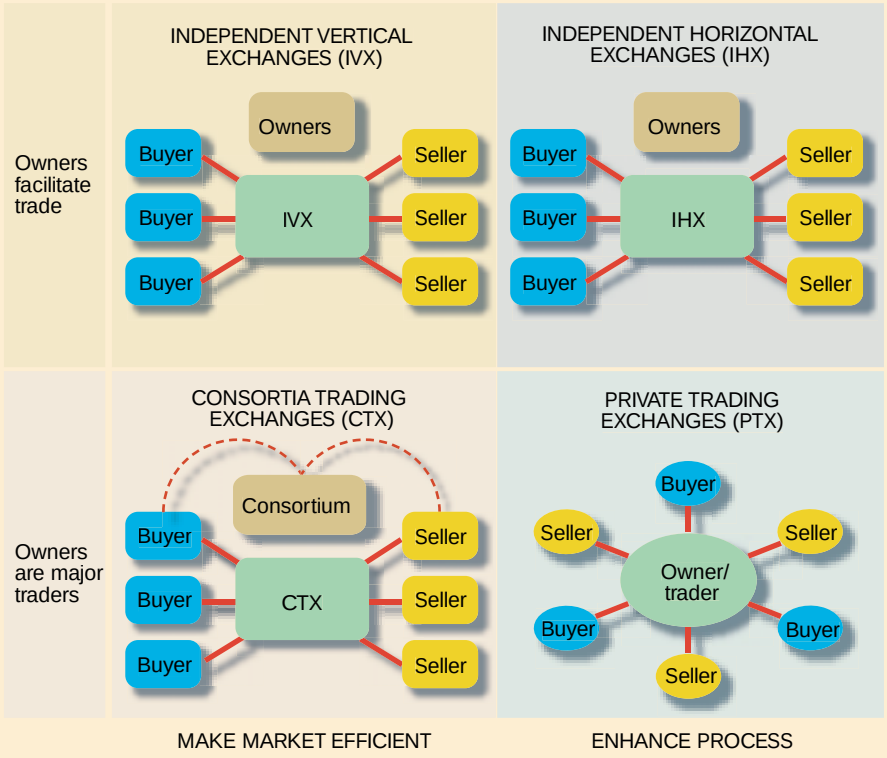
However, the exchange's business model and kinds of trading processes it supports are what drive traffic and keep participants coming back. Four different business models serve as the framework of today's energy commodity exchanges (figure).

■ Independent trading exchanges (ITXs). There are two types of independent trading exchanges: independent vertical exchanges (IVXs) and independent horizontal exchanges (IHXs). For energy trading, vertical exchanges make more sense. An IVX acts as a neutral third party, facilitating commerce for a specific vertical industry; Altra Market Place is a prime example. Unlike their IHX brethren, IVXs have deep knowledge about a specific vertical industry.

■ Consortia trading exchanges (CTX) are formed by a collection of significant industry players who often are major investors in the exchange. A substantial portion—although not necessarily a majority—of trading is executed by members of the consortium. Examples in the energy space include the Intercontinental Exchange (ICE) and Tradespark. The founders and their trading bring a deep understanding of the industry and instant liquidity to a CTX.

■ Private trading exchanges (PTXs). A PTX commerce platform attempts to provide corporate trading and collaboration support across a heterogeneous back-office landscape. PTXs go beyond electronic data interchange (EDI) initiatives: To improve the flow of information about the exchange's business processes, a supply chain captain (or hub) asks for compliance from customers, suppliers, and trading partners. As with EDI, these efforts are often viewed as benefiting only the hub company, which in turn makes participant recruitment very difficult without liquidity. EnronOnline (EOL) and DynegyDirect are two examples of PTXs.

Trading exchanges by type of ownership and objective



$500,000. And these costs don't include the installation of a basic EAI infrastructure. However, its cost can be shared within a company among other lines of business needing one. EAI vendor Tibco provides connectors for Altra Market Place. Systems integrators like Luminant Worldwide also have built connectors.

Do you have to be as big as Enron?

There are four different types of on-line energy exchanges, and each has its pros and cons (see box below). EnronOnline (EOL) is a prime example of how a private trading exchange (PTX) can make energy traders more efficient. EOL reports an 80% reduction in cost per deal at its own operations. However, not all energy companies are willing or able to make the substantial investment needed to do so.

No two energy companies are completely alike. Many are constantly fine-tuning their long-term strategies—and, in the process, their level of commitment to on-line trading. Companies fall into three classifications, according to their trading approach (Fig. 3):

- Market makers. Companies like Enron and Dynegy—which derive most of their revenues from trading—are among the few willing and able to invest the roughly $80 million needed to build a PTX.
- System traders. These companies rely on profits from trading but aren't big enough to be market makers. While some have built or are building a PTX, more typical of this breed are companies like Reliant Energy and Williams Energy. They spend their money on making sure their enterprise systems are completely integrated and use independent trading exchanges (ITXs). Still, the cost to go that route is far from insignificant; connecting to an ITX costs from $1 million to $10 million.
- Supply traders. Distribution utilities typically need to trade to procure supply for their end-use customers—especially when they are providers of last resort and have sold

Hooking up with on-line exchanges

Few energy trading exchanges have done much to make it easy for participants to integrate their mid- and back-office systems and software with the exchange. That's because most of them are still maturing (figure). Most have put the majority of their development dollars into building functionality to facilitate bidding and attract traders. Private trading exchanges (PTXs) like EnronOnline and DynegyDirect are perfect examples. Consortia trading exchanges (CTXs) like the Intercontinental Exchange (ICE) also started with a flashy front end to build liquidity.

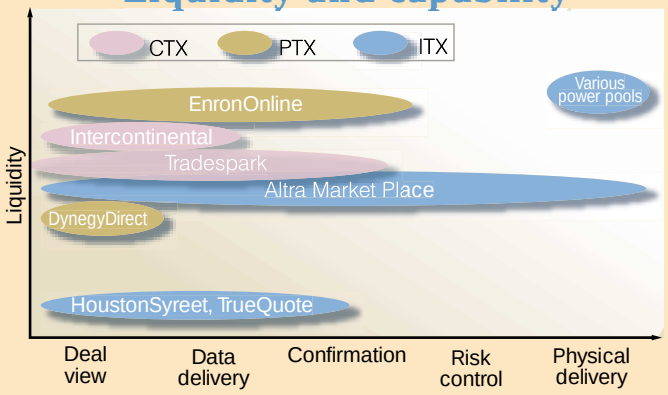
If an energy company wishes to connect electronically to an exchange, it has much work to do. The good news is that fewer exchanges are using the more expensive electronic data interchange (EDI) format for data transport any more; the bad news is that application programming interfaces (APIs) and even the fairly new extensible markup language (XML) are constantly changing. Note, too, that not all exchanges have published their API.

In many vertical markets, independent trading exchanges (ITXs) have been pressured by venture capitalists to expand their business model by offering software and integration services. For example, HoustonStreet and Truequote are developing software to aid data flow from the exchange. HoustonStreet Solution's Deal Capture Pro uses webMethods to continuously poll trading exchanges and deliver data via XML to participants' back offices. Another product, Deal Capture, delivers data to risk management, credit, and settlement systems. Cap Gemini Ernst & Young has an agreement with Truequote offering systems integration to support Truequote's software application for ordering and routing of post-execution data to appropriate departments.

ITXs and CTXs with more liquidity have taken to offering free integration services and software. For example, CTX Tradespark offers free help to participants to migrate confirmed deal data into their applications. Tradespark deals in natural gas and electricity and has benefited from eSpeed's experience with Cantor Fitzgerald in financial markets. Because it is building a platform to facilitate delivery of confirmations, it stands to reason that Tradespark would offer to integrate itself with participants' systems gratis. The original founders hold a lion's share of the equity in this exchange. Natural Gas Exchange (NGX) is also experimenting with offering free integration services to participants.

Altra Energy Technologies, which runs Altra Market Place, has developed a business offering integration services for risk management and delivery. Altra, coming from a software orientation, was quick to realize the value of creating "stickiness" by facilitating with back- and mid-office software for risk management and delivery. Of all the exchanges, Altra has the most experience with integration from deal execution through to delivery on the gas side. AltraGas integrates the purchase of gas with transportation. A recent contract for scheduling the state of California's power purchases will add to Altra's experience on the electricity side.

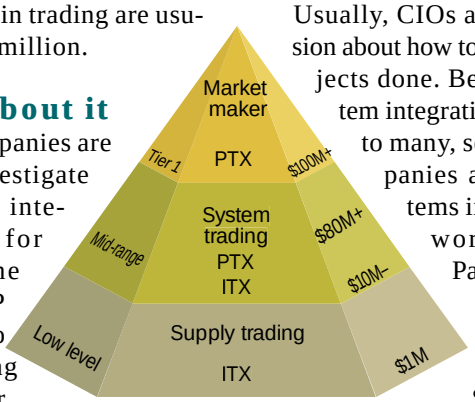
Integrating with on-line exchanges: Liquidity and capability



off their power plants. Typically, they participate in one or two exchanges, import data from the deals they do online, and stop there. As a result, their investments in trading are usually less than $1 million.

How to go about it

More energy companies are beginning to investigate what end-to-end integration can do for them. Among the benefits of STP that are proving to be most appealing is its potential for reducing the number of people needed to support trading.



3. Business strategy drives integration cost

To be effective, an integration initiative must start with an enterprise-wide examination of the company's business processes. For example, a company's current processes may require the assignment of sequential IDs to all deals—confirmed or not. But that would preclude direct importation of deal capture data from an exchange.

Integration initiatives have little chance of succeeding without participation by all lines of business—as well as strong IT leadership. The contributions of managers whose primary responsibility is operations or trading and risk management are vital, both to defining the goals of the project and the adapting of business processes to support on-line trading. CIOs must also play a key role. Aside from their obvious responsibility for maintaining systems, they are also needed to explain and champion the project on mahogany row.

Usually, CIOs also make the decision about how to get integration projects done. Because trading system integration is a new concept to many, several energy companies are turning to systems integrators to do the work. For example, Pacific Gas & Electric National Energy Group (PG&E NEG) has hired Sapient to integrate its trading operations.

Other pioneers in integrating are Cinergy and Entergy-Koch Trading LP. Cinergy, with the help of systems integrator Luminant Worldwide, is in its ninth month of rebuilding its trading floor on a Tibco ActiveEnterprise foundation. Cinergy is motivated by experience—it was caught short on its commitments in the late 1990s. Entergy-Koch Trading LP has already completed its integration project, with the help of Delinea.

From a technical standpoint, the essential ingredients for integration are:

- An EAI infrastructure.
- Application programming interfaces (APIs) to connect with on-line exchanges.
- A virtual data repository for deal information. Typically, much of the work here involves "normalizing" the data; exchanges and energy companies may use different references for hubs. The data do not necessarily have to be housed in a centralized data warehouse, but the system of record needs to be consistent. In normalizing the data, for example, all references to hubs are given a consistent nomenclature, regardless of the source of the data.
- An application server with business rules to transform data into usable information for various applications.
- Links to risk management and delivery applications—like gas management and power management—that can accept real-time data.
- A secure link to a third-party clearing or confirmation provider.
- Integration with forecasting and planning applications, and ERP and enterprise asset management systems.

On-line energy trading is here to stay. Ultimately, energy companies need to easily access their position at the corporate level to limit their exposure on physical delivery (of gas to the pipeline, or power to the grid) and to optimize the use of their own assets and contracts against their trading profile. Today, the prescription for success in trading seems to be: integrate internally, and at the same time extend the enterprise to connect with exchanges. ■

Jill Feblowitz is service director of the consultancy AMR Research, Boston.

Visit these sites for more information

Company	URL
Altra Energy Technologies	www.altranet.com
Caminus	www.caminus.com
Cap Gemini Ernst & Young	www.ey.com/global/gcr.nsf/International/Welcome_-_Energy
Delinea	www.delinea.com
DynegyDirect	www.dynegydirect.com
EnergyClear	www.energyclear.com
Enron Networks	www.enron.com
EnronOnline (EOL)	www.enrononline.com
eNymex	www.nymex.com
eSpeed	www.espeed.com
HoustonStreet	www.houstonstreet.com
IntercontinentalExchange (ICE)	www.intcx.com
Kiodex	www.kiodex.com
KWI	www.kwi.com
Luminant Worldwide	www.luminant.com
Natural Gas Exchange (NGX)	www.ngx.com
NexClea	www.nexclear.com
OnExchange	www.onexchange.com
OpenLink	www.olf.com/index.html
Primo/Sungard	www.primosystems.com
SAP	www.sap.com
Sapient	www.sapient.com
TIBCO	www.tibco.com
Tradespark	www.tradespark.com
Triple Point Technology	www.tpt.com
Truequote	www.truequote.com
webMethods	www.webmethods.com