Title: ELECTRONIC COMMODITY EXCHANGE SYSTEM HAVING DYNAMIC TRANSACTION FILTERS

Abstract: An electronic commodity exchange system provides a neutral marketplace where buyers (11) and sellers (13) of a particular commodity, such as steel, can transact business in a real-time, secure manner. The system includes a full-featured trading exchange that gives buyers and sellers of the products the ability to: create inquiries; search inquiries; create offers; search for available products; and track through a plurality of transactions, over time, in order to manage the purchase and sale of the particular commodity. The system is capable of generating a plurality of standardized buyer, seller and administrative reports for creating a paper trail of the transactions conducted on the exchange. The system also provides comprehensive information and analysis of the industry related to the particular commodity being transacted through the exchange. An advanced feature of the invention provides the buyers and sellers with the ability to dynamically filter offers and inquiries in order to manage the audience of particular transactions.

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Electronic Commodity Exchange System Having Dynamic Transaction Filters

BACKGROUND OF THE INVENTION

1. Technical Field

The present invention is directed to the field of electronic commerce. More specifically, the invention provides a comprehensive system for enabling an on-line, secure, neutral commodity exchange for buyers and sellers to transact business. Preferably, the on-line exchange is for the purchase and sale of steel products, although the system could easily be adapted for use with other types of commodities and products.

2. Description of the Related Art

Today, most buyers and sellers of commodity products, such as steel, conduct their business using telephone calls, faxes, etc. Unlike the stock market (or other types of open exchanges), there is no efficient, neutral, third-party market for buying and selling such products over a data network, such as the Internet. This lack of a neutral exchange, and in particular an on-line electronic exchange accessible via the Internet, leads to many inefficiencies in the purchase and sale of these types of commodity products. These inefficiencies include: (1) many potential buyers and sellers never meet since there is no centralized market; (2) there is no ability for buyers to conduct a broad comparison of available products, nor is there market data for sellers to utilize; (3) paper/fax/phone based communications can be slow and error-prone; (4) there is a high incidence of middlemen making disproportionate margins; (5) there is no electronic communications standard between vendors, instead there are numerous vendor-specific protocols; (6) there is no standard documentation; (7) contracts between buyers and sellers are continually renegotiated; and (8) the entire transaction process is very labor-intensive, and is generally repeated for each transaction.

Thus, there is a general need in this field for a comprehensive, on-line, neutral electronic exchange system for enabling the purchase and sale of commodity products, such as steel.

SUMMARY OF THE INVENTION

An electronic commodity exchange system provides a neutral marketplace where buyers and sellers of a particular commodity, such as steel, can transact business in a real-time, secure manner. The system includes many features and functions that are desirable in such an on-line commodity marketplace, such as a full-featured trading exchange that gives buyers and
sellers of the products the ability to: (1) create inquiries; (2) search inquiries; (3) create offers; (4) search for available products; and (5) track through a plurality of transactions, over time, in order to manage the purchase and sale of the particular commodity. The system is capable of generating a plurality of standardized buyer, seller and administrative reports for creating a paper trail of the transactions conducted on the exchange. These reports can be automatically transmitted to the parties, such as through an email message, when a transaction has been committed. The system also provides comprehensive information and analysis of the industry related to the particular commodity being transacted through the exchange.

An advanced feature of the invention provides the buyers and sellers that use the system with the ability to dynamically filter offers and inquiries in order to manage the audience that has access to the particular transaction via the exchange. This dynamic transaction filtering technology provides a level of personalization and relationship management that is highly advantageous in this type of system.

Another advanced feature of the invention is the concept of a practice field system. This system is a mirror site to the actual exchange, duplicating all of its features and functions, but not providing for transaction commitment. By training on this practice field system, buyers and sellers of the particular commodity can gain confidence in their abilities to actively post offers, post inquiries, and negotiate a deal prior to actually having to commit a transaction on the live exchange system.

According to one aspect of the present invention, an on-line exchange system is provided for buying and selling steel products. This system preferably includes: (i) a server coupled to a data communication network for hosting the on-line exchange system; (ii) a transaction database coupled to the server for storing information regarding transactions that are executed through the system; and (iii) an exchange module operating at the server for enabling the buying and selling of steel products through the system between a plurality of buyers and sellers that are operatively coupled to the server via the data communication network.

According to another aspect of the present invention, an on-line system is provided for buying and selling a particular type of commodity. This system preferably includes: (i) an exchange module for inputting offers to sell the commodity into the system and for inputting inquiries to buy the commodity into the system; (ii) a transaction database for storing the offers and inquiries, and for storing any completed transactions between a plurality of buyers and
sellers; and (iii) a practice field module for enabling the plurality of buyers and sellers to practice inputting offers and inquiries into the system and completing transactions.

Still another aspect of the present invention provides a commodity exchange system, comprising: (i) an exchange module for inputting offers and inquiries into the system and for negotiating the purchase and sale of a particular commodity; (ii) a transaction database for storing the offers and inquiries; and (iii) a plurality of dynamic transaction filters for controlling the commercial terms and conditions of sale associated with the offers and inquiries input into the system.

This system provides many advantages over prior techniques for buying and selling commodity products. These advantages include: (1) for sellers of the commodity -- a less time consuming process and more potential buyers -- an easy, standardized interface through web-browser technology and standardized coding -- flexibility in relationship management and offer viewing through the unique dynamic transaction filtering technology; (2) for buyers of the commodity -- also a less time consuming process and more potential product suppliers -- instant comparison bench-marking of the commodity being purchased -- one-stop shopping for a variety of products from a variety of vendors reduces purchase time -- flexibility in relationship management and inquiry viewing through the dynamic transaction filtering technology -- less inventory of products required due to the fast-paced nature of the real-time exchange. For both buyers and sellers of the commodity, the system provides a comprehensive source of industry information, reduces service costs in both buying and selling products, reduces prices by eliminating middlemen, and provides contract integrity and familiarity through a set of standardized forms and reports.

As noted above, the preferred embodiment of the invention is an electronic exchange for steel products. This embodiment is preferably implement using Internet-based technology, such as a Web Server, HTML coding, java scripts, and other readily accessible Internet coding tools.

As will be appreciated, the invention is capable of other and different embodiments, and its several details are capable of modifications in various respects, all without departing from the spirit of the invention. Accordingly, the drawings and description of the preferred embodiments set forth below are to be regarded as illustrative in nature and not restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS
FIG. 1 is a system level diagram of the electronic commodity exchange system;
FIG. 2 is a system level diagram of the exchange portion of the electronic commodity exchange system shown in FIG. 1;
FIG. 3 is a flow chart showing the functionality of the exchange system;
FIG. 4 is a system level diagram showing a preferred implementation of the system shown in FIGs. 1-3, in which data is routed to two parallel systems, one system for managing transactional data, and the second system for managing customer account information;
FIG. 5 is a preferred hardware implementation of the system shown in FIGs. 1-4;
FIG. 6 is an alternative hardware implementation of the system shown in FIGs. 1-4;
FIG. 7 is a logical flow diagram showing a buyer’s perspective of a transactional flow through the system;
FIG. 8 is a logical flow diagram showing a seller’s perspective of a transactional flow through the system;
FIG. 9 is a graphical user interface “page” showing the “my tracker” functionality of the present invention;
FIG. 10 is a graphical user interface “page” showing the graphical product selection screen that is used when initiating an inquiry or offer through the system of the present invention;
FIG. 11 is a graphical user interface “page” showing the process for entering product-specific information into the system of the present invention;
FIG. 12 is a graphical user interface “page” showing the process for entering commercial terms into the system of the present invention;
FIG. 13 is a graphical user interface “page” showing several options for posting an inquiry or offer to the system of the present invention; and
FIG. 14 is a graphical user interface “page” showing the process of setting a dynamic transaction filter using the system of the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

Turning now to the drawing figures, FIG. 1 is a system level diagram of an exemplary electronic commodity exchange system 10 of the present invention. This system 10 includes
several functional modules, including an exchange module 14, an industry insider module 16, a system resources module 18, a practice field module 20, and a system information module 12. Preferably, the system 10 is a combination of hardware, software, and database elements that collectively enable the functionality of the invention. Two preferred implementations of the hardware are set forth below in FIGs. 5 and 6. A block diagram of the system 10 and its various database elements is shown in FIG. 4. And a description of the software's functional attributes is set forth throughout this detailed description of the drawings.

The system 10 is preferably implemented as an on-line web site that can be accessed through the Internet using standard web browser software, such as Netscape Navigator or Microsoft Internet Explorer. The individual pages of the web site are coded using standard Internet-based coding standards, such as HTML, XML, Java, javascript, and may include a variety of graphics, sounds and multi-media files where necessary. The web site forms the front-end graphical user interface to the system, and controls the various functions of the on-line exchange that enable buyers and sellers to consummate a transaction for a particular commodity. Other software programs and database elements are included to enable the back-end functionality of the system, such as data storage, report generation, etc. Although the system 10 is preferably implemented as an on-line web site, it could, in alternative embodiments, be implemented in a variety of different formats for access through a variety of different types of communications systems, such as cable TV, satellite, microwave, or other types of networks.

Buyers 11 and sellers 13 access the commodity exchange system 10 preferably through connections via the Internet. The system 10 preferably includes a web server 17 and a database server 19. Other server configurations are also possible. The web server 17 accesses and operates the various software modules 12-20, the functionality of which are described in more detail below. The database server 19 is in communication with the web server 17, and operates to control access to a variety of system databases 15, such as a transaction database 132, a user database 112, a mirror database 136, and an accounting database 138. The transaction database 132 stores all of the on-line transactions, including offers and inquiries, input to the system 10 by the various buyers 11 and sellers 13. The user database 112 maintains a listing and profile for each of the registered users of the system 10. The accounting database is used for billing reports and invoice generation based on completed transactions. The mirror database 136 is part of the practice field aspect of the present invention, which enables users of the system to
practice generating offers and inquiries on the actual system data without having to commit a transaction.

The modules shown in FIG. 1 (12-20) are preferably software-implemented, and include a graphical user interface component and a logical component. The graphical user interface component is implemented in standard HTML (and other coding methods), and includes numerous "pages" of information. Several of these HTML "pages" are shown in FIGs. 9-14. The Exchange module 14 is the on-line neutral exchange for buying and selling the particular commodity, such as steel. The Industry Insider module 16 provides comprehensive information and intelligence for both buyers and sellers engaged in the particular industry represented by the commodity. The System Information module 12 provides information on the on-line exchange system 10. The System Resources module 18 provides access to a variety of system-level resources for use by both buyers and sellers of the commodity. And the Practice Field module 20 provides a unique training "mirror" web site for novice users of the systems. The Practice Field module 20 duplicates exactly the functionality of the Exchange module 14, using many of the same resources as the Exchange module 14, except that transactions are not committed for users in the Practice Field module 20, so that these novice users can train on the same system that they will eventually use for real trading. The Practice Field module 20 accesses the mirror database 136, which contains an exact, near-real-time replica of the data stored in the transaction database 132.

FIG. 2 is a system level diagram of the Exchange module 14 portion of the electronic commodity exchange system 10 shown in FIG. 1. The Exchange module 14 includes several sub-modules, including a "my tracker" module 22, a search inquiries module 24, a dynamic transaction filtering module 26, a search products module 28, a create offer module 30, and a create inquiries module 32. The "my tracker" module is the main interface for both buyers and sellers of the commodity into the exchange system 10. At the "my tracker" page (which is customized for each buyer and seller, an example of which is shown in FIG. 9), an individual buyer or seller can view all of their current transactions, offers, inquiries, etc., in an easy-to-understand graphical interface. From the "my tracker" page, a user can launch into the other sub-modules, if, for example, the user wants to search for a particular product, or create an offer on a product, or create an inquiry for response by sellers.

Within the search inquiries module 24, users can search through the system's 10 transactional database structure 132 in order to find certain inquiries posted by buyers interested
in purchasing a particular type of the commodity, such as rebar steel or rolled steel, in the
preferred embodiment of the invention. These inquiries are created by users of the exchange
module 32. The create offer module 30 is used by sellers of the
commodity to create a profile of a particular product that is being offered for sale over the
exchange 10, and the search products module 28 enables a user to search across the transaction
database 132 to find a particular product that is offered for sale through the system.

The final module shown in FIG. 2 is the dynamic transaction filtering module 26, which enables a user to control what specific users or classes of users can access a particular
offer or inquiry based on a user-defined set of logical rules and selections. This dynamic
transaction filtering technology provides a level of relationship management that is not found
in other electronic commerce systems. Using this technology, users of the electronic exchange
system 10 can create a single inquiry or offer for a particular product, but instead of posting this
information to the universe of system users, the posting can be filtered so that only certain users
can see the posting, or so that different users see different terms and conditions for the product
being inquired about or offered for sale. In this manner, a user can make the same underlying
offer or inquiry available to different audiences and using potentially different terms 166. For
example, the user may define a particular geographic region where offers or inquiries can or
cannot be viewed, such as a particular state. Or the user may implement individual pricing
strategies that reflect current relationships, market segments or conditions, such as one price
for a service center, another for an end-user, and still another for export. The key to this
dynamic transaction filtering and selection technology (in the context of the on-line commodity
exchange) is that it provides the user with complete control over the information in their offer
or inquiry and who can gain access to that information.

FIG. 3 is a flow chart 40 showing the functionality of the Exchange module 14. This
chart describes the functionality of: (1) logging onto the system; (2) using the "my tracker"
module; (3) customizing settings and using the dynamic transaction filtering technology; (4)
buying and selling products; and (5) searching offers and inquiries. The process begins at step
42, where a user logs into the system 10, and enters the Exchange module 14. The user is then
prompted to enter a user-name and password to gain access to the on-line exchange. This
information is then compared against the information stored in the user database 112 in order
to determine whether the user is registered with the system 10. After successful login, the user
is then presented 44 with their customized "my tracker" module screen (FIG. 9), which shows
all of the user's existing transactions and negotiations, and any new offers/inquiries that have
been received since the previous session. New postings to the Exchange and new responses in
"my tracker" are indicated by a gray background on the graphical user interface. First-time
users will see an empty "my tracker" screen.

There are several options available from the "my tracker" screen 44. A user can
customize the dynamic transaction filters 46, create an inquiry 48, create an offer 50, or conduct
a product search 52. Not shown is the ability to conduct an inquiry search, which is
functionally similar to the product search 52.

To change the dynamic transaction filter settings, the user first clicks (with the mouse)
on the part of the graphical user interface that is labeled "Exchange" at the top of the screen,
then clicks the SETTINGS tab. The system 10 then displays the user's system address book 54.
The user's system address book is a user-specific list of all of the companies a particular user
may send offers and inquiries to. When creating the offer or inquiry, the user can send it to one
or more of these companies. To remove a company from the address book, the user highlights
the company name and clicks DELETE. To add a company, the user explores an included
company index and finds the company name and clicks ADD 56.

Having selected a particular company (buyer or seller) at step 58, the user then utilizes
the dynamic transaction filters 58 in order to prevent certain companies from viewing an offer
or an inquiry that is posted to the Exchange. To add a company to the dynamic transaction
filter, the user highlights the name of the company in the company index and clicks ADD. To
delete a company from the dynamic transaction filter, the user highlights the name and clicks
DELETE. These dynamic transaction filters 58 form the relationship management function of
the system.

The dynamic transaction filtering technology provides buyers and sellers with the
ability to mirror existing relationships on the on-line exchange. Users can customize their reach
to customers and markets based on existing relationships, pricing structures, and distribution
arrangements. For example, the dynamic transaction filtering technology allows sellers to offer
the same product or availability to different customers, and at different conditions. Thus,
existing long-term customers might get an offer for a particular item with certain conditions,
while others get an offer for the same item with different conditions. In order to implement this
functionality, a user can define a filter profile for a particular company which indicates the
terms and conditions for that company. Or the user can define a filter profile for an entire class
of companies, or for all companies in a certain geographic region. Having defined a set of filter profiles in this manner, the user can then submit one offer or inquiry to the system, but then apply the dynamic transaction filters so that each company that receives the offer or inquiry views their specific terms and conditions as set forth in the filter profiles. Similarly, buyers using the dynamic transaction filtering technology may send inquiries to one supplier, several preferred suppliers, or to a universe of potential suppliers. The filtering of potential buyers/sellers could be based on geography, company size, company products, company type, etc.

Block 48 begins the create inquiry function used to buy the commodity (e.g., steel) through the on-line Exchange system 10. To enter this selection, the user first selects the CREATE INQUIRIES tab from the Exchange top menu. Next, at step 60, the user selects the particular product for purchase by selecting the type and class of product from the group presented. As shown below in FIG. 10, a feature of the invention provides for the display of a graphical depiction of the types of products sold through the system 10. The user then selects the graphical depiction of the product through the graphical user interface in order to make the product selection. At step 62, the user then selects from a variety of more specific product details. For more detailed specifications, an ADVANCED tab is provided that includes more advanced product specifications. Some selection terms, such as quantity or thickness, allow the user to enter either a specific target value or a range of values. Having selected the type and class of product in step 60, and the specifications of the product in step 62, the user then adds the selected product to the “loading dock” at step 64. The “loading dock” is a concept of the invention that describes the pending inquiry and offer activity for a particular user. Adding the selected product to the “loading dock” will then reset the interface display so the user may enter a new set of specifications and products beginning at step 60.

When there are no more products to specify, at step 66 control of the system 10 passes to step 68, where the user sets the terms and conditions of the inquiry, such as information regarding price and delivery terms. Price is not required when creating an Inquiry. For pricing terms, only a “Firm Price” (one-to-one) may be accepted by another party, and may only be sent to one supplier. A "Price Idea" does not represent a binding price; it is a price subject to further negotiation and may be sent to several suppliers. Alternatively, some of the terms and conditions may be left blank and automatically specified through the dynamic transaction filters, so that different companies receive different terms and conditions based on the same inquiry.
Once the terms and conditions are set, the user then selects an audience at step 70. Here, the dynamic transaction filtering technology allows a user to select the audience that will receive and/or be able to view the inquiry. Then, at step 72 the user posts the inquiry. Here, the user can either post the inquiry to the Exchange, although companies previously selected in using the dynamic transaction filter will be prevented from viewing the inquiry, post the inquiry to companies directly, or both. Finally, at step 74 the user is prompted to confirm and submit the inquiry. At this step, the user interface of the system 10 will display three summaries: (a) loading dock; (b) commercial terms; and (c) dynamic transaction filter choices. This is the user’s final opportunity to review the inquiry, and the last chance to either EDIT or CANCEL it. If all the details of the posting are satisfactory, then the user enters a secure trading password and the inquiry is submitted to the system.

Similarly, a seller of products can create an offer beginning at step 50 and cycle through steps 76-90 when creating an inquiry. Step 76 is similar to step 60. Step 78 is similar to step 62. Step 80 is similar to step 64. Step 82 is similar to step 66. Step 84 is similar to step 68. Step 86 is similar to step 70. Step 88 is similar to step 72. And step 90 is similar to step 74.

Block 52 shows the beginning of the product search function. Here, the user selects the SEARCH PRODUCTS tab from the Exchange top menu. At step 92, the user selects a particular type of product. The user can then further define the search at step 94 by entering additional details about the particular type of product. Having entered the product details, the user then selects the SEARCH key, and the system 10 searches through the product database 132 in order to find matching products. The user can then view the search results at step 96. Here, the system 10 displays a list of items that meet the search criteria. For more detailed product information about a particular item, the user can then click on a product ID associated with a product on the search list. To change the parameters of the search, the user can then click REFINE SEARCH and start the search process over again.

Once a product is found, the user can then enter the negotiation step 98. Here, the user selects the BID button near one of the items on the search list and is prompted to make an offer on the particular product. If the offer is a “Price Idea,” then the user cannot directly accept it. If the user wants to accept the terms, the user must first send a counter-offer to the seller with a “Firm Price.” This will then allow the seller to accept the terms. If the user wants to counter the offer and change the price and/or quantity of the item, then the user enters a counter-offer.
in the space provided and clicks SUBMIT. The counter-offer will then be sent to the seller. If the offer is “Subject to Prior Sale,” and the user agrees to the terms, then the user simply selects ACCEPT from the drop-down menu. For security reasons, the user must enter their unique trading password on the negotiation page before a response is submitted. A deal can only be concluded when all items are accepted. When this occurs, the transaction completion screen is displayed showing contact information, product details, and commercial terms.

Similarly to the product search steps 52-98, a seller can conduct a search inquiry (not shown) to find specific inquiries posted by potential buyers.

FIG. 4 is a system level diagram showing a preferred implementation of the system 10 shown in FIGs. 1-3, in which data is routed to two parallel systems, one system for managing transactional data, and the second system for managing customer account information. This system 100 shows the various database structures and report capabilities of the system 10 shown in FIGs. 1-3, and described throughout this application.

Users 102 enter and access data into and from the dual-system 100 through the world-wide-web (WWW) part of the Internet 106. Other system users 104 also enter through the WWW 106, but may only access the customer account information, as they are not conducting purchases or sales. On the customer account side of the system, a firewall system 108B separates the internal Exchange system 10 from the outside world. Such firewall systems 108B are well-known in the art of data processing and provide security for the internal network and systems. Once through the firewall 108B, customer account information is preferably accessed through a database service known as “Silkenet eService” 110. The Silkenet eService provides a highly comprehensive set of features and functions for managing customer data. This service accesses a structured database 112, where the customer account information is stored. Using this information, and the eService functions, customers and other users can create a variety of reports, such as user/company reports 114, company history reports 116, user experience reports 120, customer reports 128, market reports 126 and billing reports 124. This information can also be ported to two other databases, a sales management database 118, where meeting reports and contact management information is stored, and a marketing database 122, where direct marketing, e-mail newsletters, and other types of documents can be created for use with the customers 102 of the commodity exchange system 10.

On the transactional side of the system 100, users 102 gain access to the system through the WWW 106. A firewall system 108A separates the internal commodity exchange
system 10 from the outside world. Once through the firewall, a user preferably interacts with
the website pages that form the interface to the system and the various system databases
through a product known as BroadVision. This product, which has been customized for the
present invention, provides a wide array of features and functions, some of which are described
in this application. Through this custom product (and the graphical user interface presented
below), customers of the system (i.e., buyers and sellers of the commodity) post offers, post
inquiries, search products, search inquiries, track offers, sales and inquiries, conduct on-line
negotiations, and otherwise interact with the system and the product data stored in the
transactional database 132.

Information from the transactional database 132 is made available to the billing engine
134, which manages the billing process for each transaction, and an internal accounting database
138. Also shown in FIG. 4 is the previously mentioned "Practice Field" module database 136,
which contains a mirror-image of the data stored in the transactional database 132, so that
novice users of the system 10 can practice posting offers and inquiries, conducting negotiations,
and purchasing and selling products, without having to commit a transaction.

FIG. 5 is a preferred hardware implementation of the system shown in FIGs. 1-4. This
hardware implementation includes a Nokia router 150B coupled to an external network 150A.
Beyond the router 150B is a switch 150C, a web server 150D, a database server 150E, and a
pair of data storage facilities 150F, 150G.

FIG. 6 is an alternative hardware implementation of the system shown in FIGs. 1-4.
This implementation includes a parallel architecture for redundancy purposes consisting of a
pair of routers 152A, 152B, a pair of firewalls 152C, 152D, switches 152E-152H, server
systems 152I, 152K, 152L, and 152M, and a pair of data storage facilities 152J, 152N. These
systems are cross coupled so that if one of the systems fails, the other system in the group can
continue processing information.

FIG. 7 is a logical flow diagram showing a buyer’s perspective of a transactional flow
through the system 10. The process beings when the buyer either receives an offer 162, or
creates an inquiry 186. The received offer 162 is either a firm offer 164, an offer subject to a
prior sale 166, or a price idea 168. In the case of a firm offer 164, the buyer can accept the
offer 170, in which case the transaction is completed, the buyer can reject the offer 172, in
which case the negotiation is terminated, or the buyer can counter-offer 174. In the case of an
offer subject to a prior sale 166, the buyer can accept the offer 176, in which case the
transaction is completed, the buyer can reject the offer 178, in which case the negotiation is
terminated, or the buyer can counter-offer 180. In the case of a price idea offer 168, the buyer
cannot accept the offer, since this is not a firm offer but just a price idea. Instead, the buyer
can only reject the price idea 182, in which case the negotiation is terminated, or the buyer can
counter-offer 184.

The inquiry is either a firm inquiry 188 or a price idea inquiry 190. In response to the
firm inquiry 188, the seller can either accept the inquiry 192, in which case the transaction is
completed, or the seller can reject the inquiry 194, in which case the negotiation is terminated,
or the seller can counter-offer 196. In response to the price idea inquiry 190, the seller can only
reject the inquiry 198, in which case the negotiation is terminated, or the seller can counter-
offer 200.

FIG. 8 is a logical flow diagram showing a seller's perspective of a transactional flow
through the system. The steps in FIG. 8, steps 302-340, are identical to the steps shown in
FIG. 7, except that in the top part of the flow diagram of FIG. 8 the seller is creating an offer
and the buyer is responding to that offer, and in the bottom part of the flow diagram the seller
is receiving an inquiry from a buyer and then responding to that inquiry.

FIG. 9 is a graphical user interface "page" showing the "my tracker" functionality of
the present invention. This page is displayed when the user selects the "Exchange" tab 414 on
the module selection bar at the top of the graphical user interface. Other tabs are used to select
other modules in the system 10, such as the System Information module 12, the Industry Insider
module 16, and the System Resources module 18. As noted above, the "my tracker" screen is
customized by the Exchange module 14 for each user and provides a list of open items,
completed transactions and closed items for the particular user. The user can select from a
display of "open items" 402, "transactions completed" 404, and "closed items" 406 using the
tabs on the left side of the screen. Along the top of the screen, but below the module selection
tabs, is a sub-set of functions 412 that are available through the Exchange module 14, such as:
(1) select "my tracker;" (2) jump to the search products screens; (3) jump to the search inquiries
screens; (4) jump to the create offer screens; (5) select create inquiries; (6) jump to the dynamic
transaction filters settings screens; (7) get help; or (8) log out from the Exchange module 14.

Within the "my tracker" display window 408, the system shows a listing of products identified
by: type, commodity ID, counter party, description, expiration date, latest action date, total
replies, and new replies. The display window changes based upon whether tab 402, 404 or 406
is selected by the user. Also shown in FIG. 9 is a buyer/seller selection key 410, which allows
the user to change from buyer mode to seller mode, and thereby alter the display of the my tracker window.

FIG. 10 is a graphical user interface "page" showing the graphical product selection
screen 420 that is used when initiating an inquiry or offer through the system 10 of the present
invention. This screen is displayed when the user selects the "Create Offer" or "Create Inquiry"
tab on the function bar 412 of the Exchange module 14. In either case, the system 10 generates
a graphical display 422 of the types of products that may be bought or sold via the commodity
exchange 10. For example, in a steel exchange, the system displays a graphical representation
of various types of rolled steel, plate steel, tinmill, rebar, etc. The user can then select the
g graphical representation of the product they desire to buy or sell through the system. Having
selected the type of product using the graphical product representations, the user can then select
the quality of product using the quality selector 424. For steel products, this may be a selection
between "prime" and "non-prime" steel products.

FIG. 11 is a graphical user interface "page" 430 showing the process for entering
product-specific information into the system of the present invention. Here, the user has
already selected a particular product using the graphical selection screen shown in FIG. 10, and
is now creating a specific inquiry to buy a product by entering details about the product to post
on the system 10. This can be done through two tabs, a "quick tab" 434 and an "advanced tab"
436. The quick tab 434 provides common optional specifications for the particular product, and
the advanced tab 436 provides more detailed options. As a user creates the inquiry using this
screen 430, it is placed in the user's "Loading Dock" 432. The user can view or remove entries
from the Loading Dock display 432. Once the details regarding the product have been entered,
the user selects the "DONE" key to move to the next step in the create inquiries process, which
is setting the commercial terms.

FIG. 12 is a graphical user interface "page" 440 showing the process for entering
commercial terms into the system 10 of the present invention. The commercial terms are
entered in the area 442, and the selected products are shown in the Loading Dock display 432.
Although a common set of commercial terms are added to the product posting using this
interface, it should be noted that some of these terms may be overridden or modified to the
extent that the user has configured a dynamic transaction filter for a particular company with
specific terms and conditions for sale.
FIG. 13 is a graphical user interface "page" 450 showing several options for posting an inquiry or offer to the system 10 of the present invention. In this step of the process, three options 452 are made available to the user. The user can either send the posted inquiry directly to other members of the exchange, or the user can place the post on the Exchange but only allow certain members to gain access to the posting, or they can do both.

FIG. 14 is a graphical user interface "page" 460 showing the process of setting an example dynamic transaction filter using the system 10 of the present invention. The dynamic transaction filter shown in FIG. 14 prevents certain users from accessing the posting. The filter display 464 shows the names of various companies that will be prevented from viewing the product posting. The companies in this list can be modified. Using the included address book 466, the user generating the posting can also select certain users to send a direct inquiry to using the system 10. In this way, users can control access to their postings and can also direct certain postings to a particular group of potential responding users.

Having described in detail the preferred embodiments of the present invention, including the preferred methods of operation, it is to be understood that these embodiments and methods of operation could be carried out with different elements or steps. The preferred embodiments are presented only by way of example and are not meant to limit the scope of protection that should be afforded to this invention, which is set forth in the following claims.
What is Claimed:

1. An on-line exchange system for buying and selling steel products, comprising:
   a server coupled to a data communication network for hosting the on-line exchange system;
   a transaction database coupled to the server for storing information regarding transactions that are executed through the system; and
   an exchange module operating at the server for enabling the buying and selling of steel products through the system between a plurality of buyers and sellers that are operatively coupled to the server via the data communication network.

2. The system of claim 1, further comprising:
   a user database coupled to the server for storing information regarding the plurality of buyers and sellers that are registered to execute transactions through the system.

3. The system of claim 1, further comprising:
   an accounting database for storing a plurality of financial reports generated by the system that summarize the executed transactions.

4. The system of claim 1, further comprising:
   a mirror database that stores a replica of the transaction information stored in the transaction database; and
   a practice field module operating at the server and coupled to the mirror database for enabling buyers and sellers to practice executing transactions through the system.

5. The system of claim 1, further comprising:
   an industry insider module for storing and presenting information regarding the steel industry to the plurality of buyers and sellers.

6. The system of claim 1, wherein the server includes a system server for operating the exchange module and a database server controlling access to the transaction database.

7. The system of claim 1, wherein the exchange module includes:
   a data input interface for inputting sale offers and purchase inquiries into the system;
   a search interface for searching the information stored in the transaction database; and
   a tracking interface for displaying any offers or inquiries input into the system that are related to a particular buyer or seller.
8. The system of claim 7, wherein the exchange module includes:

an interface for setting one or more dynamic transaction filters that control which of
the plurality of buyers and sellers can access a particular offer or inquiry.

9. The system of claim 7, wherein the data input interface includes a graphical product
selection screen that displays a graphical depiction of a plurality of types of steel products that
can be bought or sold through the system.

10. The system of claim 7, wherein the data input interface includes:

a product selection screen for selecting a type of steel product to be bought or sold
through the system;

a product specification screen for selecting the specifications of the product to be
bought or sold through the system; and

a terms and conditions screen for selecting the commercial terms and conditions of the
product to be bought or sold through the system.

11. The system of claim 7, wherein the data input interface further includes:

a posting options selection screen for selecting certain of the plurality of buyers and
sellers to receive a direct communication of the product to be bought or sold through the
system.

12. The system of claim 11, further comprising:

an address book from which the plurality of buyers and sellers that are to receive the
direct communication can be selected.

13. The system of claim 7, wherein the data input interface further includes a loading
dock display screen that displays a listing of the selected products and the selected product
specifications that have been input into the system for a particular buyer or seller.

14. The system of claim 1, wherein the server is a web server, and the data
communication network is the Internet.

15. The system of claim 8, wherein the dynamic transaction filters include a dynamic
transaction filter for limiting, by specific buyer or seller, which buyers or sellers can access a
particular offer or inquiry.

16. The system of claim 8, wherein the dynamic transaction filters include a dynamic
transaction filter for limiting, by specific class of buyer or seller, which classes of buyers or
sellers can access a particular offer or inquiry.
17. The system of claim 16, wherein the specific class of buyer or seller relates to the geographic location of the buyer or seller.

18. The system of claim 16, wherein the specific class of buyer or seller relates to the type of company of the buyer or seller.

19. The system of claim 8, wherein the dynamic transaction filters include one or more filter profiles associated with a particular buyer or seller, wherein the one or more filter profiles specify a particular set of commercial terms and conditions to be applied to any transactions executed with the particular buyer or seller.

20. An on-line system for buying and selling a particular type of commodity, comprising:
   - an exchange module for inputting offers to sell the commodity into the system and for inputting inquiries to buy the commodity into the system;
   - a transaction database for storing the offers and inquiries, and for storing any completed transactions between a plurality of buyers and sellers; and
   - a practice field module for enabling the plurality of buyers and sellers to practice inputting offers and inquiries into the system and completing transactions.

21. The on-line system of claim 20, wherein the commodity is steel.

22. A commodity exchange system, comprising:
   - an exchange module for inputting offers and inquiries into the system and for negotiating the purchase and sale of a particular commodity;
   - a transaction database for storing the offers and inquiries; and
   - a plurality of dynamic transaction filters for controlling the commercial terms and conditions of sale associated with the offers and inquiries input into the system.
Fig. 2
Fig. 4B

MATCH TO FIG. 4A

SYSTEM ADMINISTRATION

WWW

FIREWALL

SILKNET eSERVICE

SILKNET DATABASE (AUTHENTICATES USER ID) (SQL SERVER)

SALES MANAGEMENT DATABASE (MEETING REPORTS, CONTACT MANAGEMENT)

MARKETING DATABASE (DIRECT MARKETING, E-MAIL NEWSLETTERS, SEGMENTATION TARGETING)

USER COMPANY REPORTS

COMPANY HISTORY WITH SYSTEM

USER EXPERIENCE WITH SITE, ACCOUNT REPS

BILLING REPORTS (DUPLICATE)

CUSTOMER REPORTS

MARKET REPORTS

SUBSTITUTE SHEET (RULE 26)
Fig. 5
Fig. 6
STEEL DIRECT Option

STEEL DIRECT allows you to select the audience that has access to your offers or inquiries. You have three options when selecting your audience.

- **Post To Exchange**: Post your offer or inquiry to the Exchange. Your Exchange Filter will prevent specific companies from seeing your submission.

- **Send Directly To Select Companies**: Send your offer or inquiry to specific companies. You may only send your offer or inquiry directly to one company if you selected 'Firm Price one-to-one' in the Commercial Terms.

- **POST to the Exchange AND Send DIRECTLY**: Post your offer or inquiry to the Exchange and Send your offer or inquiry directly to specific companies. Your Exchange Filter will prevent specific companies from seeing your submission.

When you have finished completing the selected STEEL DIRECT option, click the NEXT button at the bottom of the page to continue.

Cancel  Previous  Done

**Fig. 13**
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) :G06F 17/60
US CL :705/26, 37
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
U.S. : 705/26, 37

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
STN; DIALOG
terms searched: product, service, offer, exchange, steel, buyer, seller, database, transaction

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y,E</td>
<td>US 6,141,653 A (CONKLIN et al.) 31 October 2000, Abstract; col. 13, lines 66-67; col. 14, lines 1-67; col. 15, lines 3-33; col. 17, lines 14-67; col. 18, lines 1-37; col. 19, lines 14-67; col. 20, lines 1-48; col. 23, lines 42-67; col. 26, lines 53-64; col. 33, lines 7-27; fig. 1k [214]; fig. 1g [50, 54, 58, 68, 70, 78]; fig. 2a [16cf, 16af]; fig. 5a [210s, 222, 225, 25L, 08]</td>
<td>1-22</td>
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<td>Y</td>
<td>US 5,794,207 A (WALKER et al.) 11 August 1998, Abstract, col. 8, line 27 - col. 11, line 3</td>
<td>1-22</td>
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<td>Y</td>
<td>US 5,862,223 A (WALKER et al.) 19 January 1999, Abstract; fig. 1 [400, 500, 200]; fig. 2 [200, 245]; col. 6, line 56 - col. 11, line 56</td>
<td>1-22</td>
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</table>

[X] Further documents are listed in the continuation of Box C.  
See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to persons skilled in the art
"Z" document member of the same patent family

Date of the actual completion of the international search  
07 DECEMBER 2000

Date of mailing of the international search report  
12 JAN 2001

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Form PCT/ISA/210 (second sheet) (July 1998)*
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<th>Category</th>
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<td>Y, P</td>
<td>US 5,970,475 A (BARNES et al.) 19 October 1999, Abstract; fig. 1 [16, 12, 14]; col. 3 line 5 - col. 4, line 26</td>
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</tr>
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<td>US 6,058,379 A (ODOM et al.) 02 May 2000, Abstract; fig. 1 [100, 110, 170]; col. 2, line 29 - col. 3, line 60; col. 4, lines 15-67; col. 5, line 1 - col. 10, line 35.</td>
<td>1-22</td>
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<td>Y</td>
<td>US 5,835,896 A (FISHER et al.) 10 November 1998, Abstract; col. 2, lines 10-67; col. 4, lines 32-67; col. 5, lines 1-27; col. 6, line 4 - col. 9, line 47.</td>
<td>1-22</td>
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