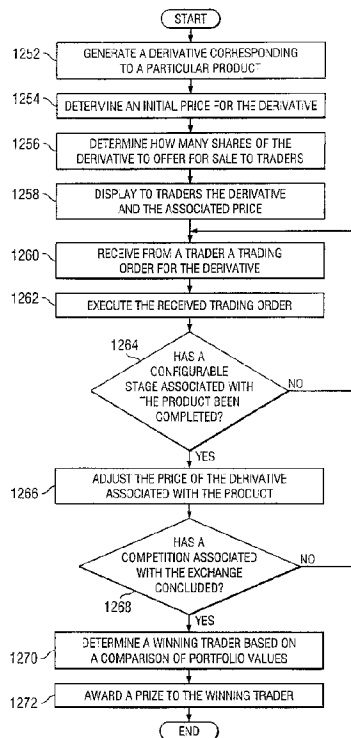




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 (54) Title: SYSTEM FOR MARKET RESEARCH BASED ON FINANCIAL EXCHANGE



(57) **Abrégé/Abstract:**

A system for trading a plurality of derivative financial instruments comprises a processor operable to receive a first order to buy a derivative financial instrument representing at least one product. The processor is further operable to receive a second order to sell the derivative financial instrument. The processor is further operable to determine a market price based at least in part on the first order and the second order. The processor is further operable to execute a trade at the determined market price. The processor is further operable to generate market data associated with the at least one product, the market data based at least in part on the first order and/or the second order. The system further comprises a memory operable to store the first order and/or the second order.

ABSTRACT OF THE DISCLOSURE

5 A system for trading a plurality of derivative financial instruments comprises a processor operable to receive a first order to buy a derivative financial instrument representing at least one product. The processor is further operable to receive a second order to sell the derivative financial instrument. The processor is further operable to determine a market price based at least in part on the first order and the second order. The processor is further operable to execute a trade at the determined market price. The processor is further operable to generate market data associated with the at least one product, the market data based at least in part on the first order and/or the second order.

10 The system further comprises a memory operable to store the first order and/or the second order.

**SYSTEM FOR MARKET RESEARCH  
BASED ON FINANCIAL EXCHANGE**

TECHNICAL FIELD OF THE INVENTION

5           This invention relates in general to computer-implemented financial systems, and in particular to a system and method for market research based on a financial exchange.

BACKGROUND OF THE INVENTION

10           Computer-implemented securities trading systems are well known in the art. One such system is that disclosed in U.S. Pat. No. 4,674,044, issued to Kalmus et al., entitled "Automated Securities Trading System". These computer-implemented securities trading systems obtain bid and asked trades based on the bid and asked prices. However, there is generally still a human component to such systems.

15           For example, most financial markets also employ one or more market makers called "specialists." These specialists fill customer orders from the specialist's inventory position if there are no matches for the customer orders in the open market. In the prior art, the specialist function is not automated, but is performed by a firm or individual. Thus there is a need in the art for an improved computer-implemented trading system that includes an automated specialist function to create a market for the securities traded and to lessen the volatility of smaller securities markets.

20

SUMMARY OF THE INVENTION

          Accordingly, it is an object of this invention to solve the problems with existing systems described above.

25           Another object of the present invention is to lessen the price volatility of derivative financial instruments traded in narrower markets.

          Another object of the present invention is to provide an on-line virtual trading system.

30           Another object of the present invention is to provide a virtual specialist program that engages in trading in the market to offset the price volatility and to provide liquidity to the market.

Another object of the present invention is to provide a security instrument pricing system which depends from buy-sell trade imbalances.

Another object of the present invention is to provide a security instrument price control system which controls volatility of a security.

5 Another object of the present invention is to provide a security instrument trade halting system to prevent extreme price volatility for a security instrument.

Another object of the present invention is to provide a ghost trader for a security in order to generate trading activity so that adjusted market control factors take effect.

10 Another object of the present invention is to provide a virtual reserve bank program to control money market interest rates and global volatility for the virtual market.

Another object of the present invention is to provide an on-line market research tool which researchers can access to obtain statistical information based on trading behavior.

15 To overcome the limitations in the prior art, and to overcome other limitations that will become apparent upon reading and understanding the present specification, the present invention discloses a system for trading a plurality of derivative financial instruments. The system comprises a processor operable to receive a first order to buy a derivative financial instrument representing at least one product. The processor is further operable to receive a second order to sell the derivative financial instrument. The processor is further operable to determine a market price based at least in part on the first order and the second order. The processor is further operable to execute a trade at the determined market price. The processor is further operable to generate market data associated with the at least one product, the market data based at least in part on the first order and/or the second order. The system further comprises a memory operable to store the first order and/or the second order.

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In one embodiment, a database of securities is provided for trading in an open, computerized, exchange. In some embodiments, securities are listed which relate to movies, actors, or service companies. In other embodiments, securities are listed which relate to products. The securities may represent products in various stages of development.

30 For example, a particular security may represent a product in the design stage, a product

undergoing safety testing, a product being marketed, a product that is pending regulatory approval, and/or a product in any suitable part of its life cycle.

Users may access the system over a network, using a standard interface. An exemplary system comprises a Web server with an SQL compliant back-end database, with a standardized Web browser interface. Using the Web browser, the user may register for the on-line trading system over a network, providing demographic information, such as age, sex, location, occupation, income, hobby interest, and the like. Once registered, the user is given the option of choosing a unique userID which will be used for logging in after registration. In providing the demographic information, the user also provides an e-mail address to which a randomly assigned password and other instructional information can be forwarded.

Once the user has received a password, the user may freely log in and out of the system over the Web by selecting a start button present on a Web home page for the system. However, while the password is being forwarded to the new user, the new user is given temporary access to the system so that trading can begin instantaneously.

Automatically, the user is provided with a fixed quantity of virtual currency in virtual dollars (V\$) from a reserve bank program, described below, to begin trading with. This quantity can either be considered a loan from the reserve bank program, for which interest is charged, or a gift.

After logging in, the user's portfolio summary page is displayed which displays the user's current cash balance, amount held in stocks, bonds, and other types of securities. When the new user logs in, the cash value of the user's portfolio is represented solely in cash, or in a money market account. The cash in the user's portfolio accrues at an interest rate set by a virtual reserve bank program.

The user may trade security instruments by typing in the symbol for the instrument for which a purchase is desired in a buy-sell area of the page. A quantity is also specified in the buy sell area. If the user does not know the symbol for a particular instrument, a lookup or search function is provided in another area of the screen using standard graphical user interface (GUI) features such as drop-down list boxes, text search boxes, or slider bar

lists. Alternatively, a ticker tape style updating menu at the bottom of the screen displays available instruments with the corresponding instrument prices.

Once the user has successfully entered the symbol for an available instrument, a buy button may be pressed in the buy-sell area of the page. If the user has enough cash on account, and if the instrument is available for trading, then a confirmation screen appears before execution of the trans-action. Upon confirmation, the trade is executed, and the cash is debited from the user's account.

If the user wishes to sell a security instrument, the same procedure is followed, except, a sell button is clicked on in the buy-sell area of the Web page. After confirmation, the market price for the shares sold is added to the user's account, and the shares are made available in the system for fulfilling purchase orders.

The system includes a virtual specialist program which, among other things, handles fulfillment of buy and sell orders. In the embodiment of the present system, the virtual specialist program controls the economy, and provides it with liquidity. In one embodiment, the virtual specialist program provides instantaneous liquidity by fulfilling all orders, whether or not there are equal and matching sell orders to offset buy orders, and vice versa. The system keeps a running net movement balance for the quantity of buy or sell trades which the virtual specialist program had to fulfill without offsetting sell or buy trades. The imbalance is stored as a positive number if the buy-sell imbalance represents more buy trade orders executed than sell orders, or a negative number if the buy-sell imbalance represents more sell orders executed than buy orders.

Unlike the case with non-virtual markets, the virtual specialist program of the embodiment does not control the economy by setting prices of shares based on last executed buy order price offered. Rather, the virtual specialist program determines the price of an instrument after each trade by computing and effecting an outstanding buy-sell imbalance.

Certain exemplary embodiments can provide an apparatus, comprising: at least one processor of an electronic trading system, the at least one processor operable to: initiate execution of an internal timer for a sweep pricing cycle; determine data representing an initial price of a financial instrument, wherein the processor is operable to determine the

initial price based at least in part on a characteristic of a pharmaceutical, the financial instrument representing the pharmaceutical; receive, from a graphical user interface of a computer of a first trader of a group of traders, data representing a first order to buy the financial instrument; store the first order as a data structure in a first queue of a first data table in a memory; maintain the first order in the first queue until expiration of an internal timer of the sweep pricing cycle; receive, from a graphical user interface of a computer of a second trader of the group of traders, data representing a second order to sell the financial instrument; store the second order as a data structure in a second queue of a data table in the memory; maintain the second order in the second queue until expiration of the internal timer of the sweep pricing cycle; detect whether expiration of the sweep pricing cycle occurred; in response to detection of the expiration of the sweep pricing cycle, release the first order from the first queue and the second order from the second queue and determine data representing a price of the financial instrument based at least in part on the first order and the second order during the sweep pricing cycle; execute an electronic trade of the financial instrument at the price; determine data representing an adjusted price based at least in part on a result associated with at least one of a stage of development of the pharmaceutical, a regulatory approval process of the pharmaceutical, and performance testing of the pharmaceutical; and generate market data associated with the pharmaceutical, the market data being based at least in part on at least one of the trade, the first order, and the second order.

Certain exemplary embodiments can provide a method, comprising: initiating execution of an internal timer for a sweep pricing cycle; determining, by at least one processor of at least one computing device of an electronic trading system, data representing an initial price of a financial instrument, wherein the initial price is determined based at least in part on a characteristic of a pharmaceutical, the financial instrument representing the pharmaceutical; receiving, by the at least one processor, from a graphical user interface of a computer of a first trader of a group of traders, data representing a first order to buy the financial instrument; storing the first order as a data structure in a first queue of a first data table in a memory; maintaining the first order in the first queue until expiration of an internal timer of the sweep pricing cycle; receiving, by the

at least one processor, from a graphical user interface of a computer of a second trader of the group of traders, data representing a second order to sell the financial instrument; storing the second order as a data structure in a second queue of a data table in the memory; maintaining the second order in the second queue until expiration of the internal  
5 timer of the sweep pricing cycle; detecting whether expiration of the sweep pricing cycle occurred; in response to detection of the expiration of the sweep pricing cycle, releasing the first order from the first queue and the second order from the second queue and determining, by the at least one processor, data representing a price based at least in part on the first order and the second order during the sweep pricing cycle; executing, by the at  
10 least one processor, an electronic trade at the price; determining, by the at least one processor, data representing an adjusted price based at least in part on a result associated with at least one of a stage of development of the pharmaceutical, a regulatory approval process of the pharmaceutical, and performance testing of the pharmaceutical; and generating, by the at least one processor, market data associated with the pharmaceutical,  
15 the market data being based at least in part on at least one of the trade, the first order, and the second order.

Certain exemplary embodiments can provide a computer-readable medium storing instructions, the computer-readable medium being a tangible medium, the instructions being executable by at least one processor to: initiate execution of an internal timer for a  
20 sweep pricing cycle; determine data representing an initial price of a financial instrument, wherein the instructions are executable by the at least one processor to determine the initial price based at least in part on a characteristic of a pharmaceutical, the financial instrument representing the pharmaceutical; receive, from a graphical user interface of a computer of a first trader of a group of traders, data representing a first order to buy the financial  
25 instrument; store the first order as a data structure in a first queue of a first data table in a memory; maintain the first order in the first queue until expiration of an internal timer of the sweep pricing cycle; receive, from a graphical user interface of a computer of a second trader of the group of traders, data representing a second order to sell the financial instrument; store the second order as a data structure in a second queue of a data table in  
30 the memory; maintain the second order in the second queue until expiration of the internal



timer of the sweep pricing cycle; detect whether expiration of the sweep pricing cycle occurred; in response to detection of the expiration of the sweep pricing cycle, release the first order from the first queue and the second order from the second queue and determine a price of the financial instrument based at least in part on the first order and the second order; execute an electronic trade of the financial instrument at the price via an electronic trading system; receive information about a result associated with at least one of a stage of development of the pharmaceutical, a regulatory approval process of the pharmaceutical, and performance testing of the pharmaceutical; determine, data representing an adjusted price based at least in part on the received information about the result; responsive to the act of determining the adjusted price, output to the graphical user interfaces of the respective computers of the first and second traders data representing the adjusted price; and generate market data associated with the pharmaceutical, the market data being based at least in part on at least one of the trade, the first order, and the second order.

Certain exemplary embodiments can provide an apparatus, comprising: a processor operable to: determine an initial price of a financial instrument, wherein the processor is operable to determine the initial price based at least in part on a characteristic of an automobile, the financial instrument representing the automobile; receive, from a first trader of a group of traders, a first order to buy the financial instrument; receive, from a second trader of the group of traders, a second order to sell the financial instrument; determine a price of the financial instrument based at least in part on the first order and the second order; execute a trade of the financial instrument at the price; determine an adjusted price based at least in part on a result associated with at least one of a stage of development of the automobile, an approval process of the automobile, and performance testing of the automobile; and generate market data associated with the automobile, the market data being based at least in part on at least one of the trade, the first order, and the second order; and a memory operable to store at least one of the first order and the second order.

Certain exemplary embodiments can provide a method, comprising: determining, by a processor of a computing device, an initial price of a financial instrument, wherein the initial price is determined based at least in part on a characteristic of an automobile, the financial instrument representing the automobile; receiving, by the processor, from a first

trader of a group of traders, a first order to buy the financial instrument; receiving, by the processor, from a second trader of the group of traders, a second order to sell the financial instrument; determining, by the processor, a price of the financial instrument based at least in part on the first order and the second order; executing, by the processor, a trade of the financial instrument at the price; determining, by the processor, an adjusted price based at least in part on a result associated with at least one of a stage of development of the automobile, an approval process of the automobile, and performance testing of the automobile; and generating, by the processor, market data associated with the automobile, the market data being based at least in part on at least one of the trade, the first order, and the second order.

Certain exemplary embodiments can provide a computer-readable medium storing instructions, the computer-readable medium being a tangible medium, the instructions being executable by a processor to: determine an initial price of a financial instrument, wherein the instructions are executable by the processor to determine the initial price based at least in part on a characteristic of an automobile, the financial instrument representing the automobile; receive, from a first trader of a group of traders, a first order to buy the financial instrument; receive, from a second trader of the group of traders, a second order to sell the financial instrument; determine a price of the financial instrument based at least in part on the first order and the second order; execute a trade of the financial instrument at the price; determine an adjusted price based at least in part on a result associated with at least one of a stage of development of the automobile, an approval process of the automobile, and performance testing of the automobile; and generate market data associated with the automobile, the market data being based at least in part on at least one of the trade, the first order, and the second order.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and for further features and advantages, reference is now made to the following description taken in conjunction with the accompanying drawings in which:

5           FIG. 1 is a block diagram of an exemplary hardware environment of the present invention;

          FIG. 2 is a flowchart illustrating the general logic of a first embodiment of the present invention;

10           FIG. 3 is a flowchart illustrating the logic of the pricing/ trading program of the first embodiment of the present invention;

          FIG. 4 is a flowchart illustrating the logic of the generate market price program of the first embodiment of the present invention;

          FIG. 5 is a flow diagram illustrating the logic of the virtual specialist program of the first embodiment of the present invention;

15           FIG. 6 is a flow diagram illustrating the logic of the stop trading program of the first embodiment of the present invention;

          FIG. 7 shows an exemplary administration module Screen for a second embodiment of the present invention.

20           FIG. 8A shows an exemplary interface for the second embodiment of the present invention with a new user registration screen;

          FIG. 8B shows the interface screen of FIG. 8A with a new user welcome screen displayed;

          FIG. 9 shows the interface screen of FIG. 8A with a system home page displayed;

          FIG. 10 shows the interface screen of FIG. 8A with a user portfolio page displayed;

25           FIG. 11 shows the interface screen of FIG. 8A with a trade confirmation screen displayed;

          FIG. 12a is a flow diagram illustrating the logic of an initial security pricing program for the second embodiment of the 20 system;

30           FIG. 12b illustrates a flowchart for trading derivative financial instruments representing products according to one embodiment of the present invention;

FIG. 13 is a flow diagram illustrating the logic of a security trade fulfillment and security price setting program of the second embodiment of the present invention;

FIG. 14 is a flow diagram illustrating the logic of a trade braking program of the second embodiment of the present invention;

5 FIG. 15 is a flow diagram illustrating the logic of a trade halting program of the second embodiment of the present invention;

FIG. 16 is a flow diagram illustrating the logic of a ghost trading program of the second embodiment of the present invention;

10 FIG. 17 is a flow diagram illustrating the logic of a research market tool of the second embodiment of the present invention; and

FIG. 18 shows an administration module which is used to adjust constants and variables in the system.

#### DETAILED DESCRIPTION OF THE DRAWINGS

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##### **Buy-Sell Imbalance**

The buy-sell imbalance, also referred to herein as the net movement balance (NMB), controls security prices by incrementing or decrementing security prices using a combination of a security price increment (SPI) constant, and a pair of security price  
20 threshold constants. Both a positive security price threshold (PSPT) constant, and a negative security price threshold (NSPT) constant is set in a security constant table 2002 for each security in the system (see Fig. 7). A net trade movement (NTM) variable for a trade order is set to the positive quantity of shares in the trade order if the trade order is a buy, and to the negative quantity of shares in the trade order if the trade order is a sell. A  
25 new NMB is calculated by adding the NMB before the trade, retrieved from a net price movement table 2008 (NMB (old)), to the NTM.

A security price increment (SPI) constant for the security which is the subject of the trade order is retrieved from the security constant table 2002. The NMB is then compared to the PSPT. If the NMB is greater than the PSPT, then the price for the security  
30 (SP) is calculated by adding the SPI to the SP before the trade which was retrieved from a

security price table 2006. The NMB is then reduced by the PSPT and stored back to the net price movement table.

Conversely, if the NMB is less-than the NSPT (a negative value) then the SP (new) is calculated by subtracting the SPI from the SP (old). The NMB is then incremented by  
5 the NSPT.

After the above calculations are made, the SP is stored in a security price table 2006, which keeps track of all security prices. The NMB is updated in the net movement balance database. Each record of the net movement balance database further contains an increment tracking field for keeping track of the number of consecutive increments for the  
10 security instrument, up or down. Also, a price history tracking table 2010 is updated after each trade, performing a write SQL statement which adds a record comprising the SP, NMB, userID, and other information relating to the trade. This information is used by a marketing tool, explained below, which provides statistical information to market researchers.

15 Periodically, due to natural popularity of a particular security, or by market manipulation by an individual or groups of traders, the security will realize wild fluctuations in price. This is especially true in a market in which virtual currency is used in a virtual market. Given the special circumstances of the virtual market, the system provides an artificial price control, or braking, mechanism.

20 The braking mechanism of the present invention monitors each price increment the virtual specialist performs. When a price moves up or down on a security instrument, the increment tracking field of the net movement balance table 2012 is retrieved for the security. A security brake threshold (SBT) constant, and a security brake increment (SBI) constant is retrieved from the security constant table 2002. If the total consecutive number  
25 of price increments (TCPI) is greater than the SBT, then the PSPT is increased by the security brake increment, and then stored back to the security constant table 2002. If the total consecutive number of price decrements (a negative value) is less than the SBT, the NSPT is decreased by the security brake increment, and then stored back to the security constant table 2002. In this way, for securities which have experienced price movement  
30 greater than the set thresholds, the price movement will be slowed.

Still, the braking mechanism may not be effective enough in either an extreme-bear-or bull market for the security, or the market as a whole. In those instances, a halting mechanism is provided by the system. The halting mechanism acts much in the same way as the braking mechanism. The exception is that a security halt threshold (SHT) constant is compared to the TCPI/TCPD field. If the absolute value of the TCPI/TCPD field value exceeds the SBT, trading is halted for that particular security. A notice appears on screen for a trader who tries to trade the security, informing the user that trading has been halted by the system. Trading for the security may be resumed after an administratively set period of time, or manually through an administration module.

The virtual economy may have a finite amount of capital with which to close arbitrage situations that might arise if the policy of the exchange is different than what is reflected by the prices on the market. The virtual economy is unlike so non-virtual economies, which may have an infinite amount of capital. A system administrator is provided a separate control screen where changes to global constants, such as the PSPT, NSPT, SBT, SBI, etc., can be adjusted to affect the market. In effect, the password protected control screen serves as a volatility control module. The volatility control, or ghost trade, module is used to implement and enhance monetary regulations, and the market as a whole. The desired effect is implemented by causing the system to issue buy and sell programs which comprise coordinated, across the board, buying and selling timer intervals. A timer periodically queries the ghost trading table 2014. Each security instrument record in the ghost trading table 2014 is set to cause a trade for an administratively set number of times per trading day. If the timer detects that the time interval between trades for a security has ended, the ghost trading mechanism retrieves a ghost buy probability (GBT) from the ghost trade table 2014. A random trade constant (RTC) is generated by the system. Next, a ghost security buy/sell quantity (GBQ) is retrieved from the ghost trade table 2014. If the GBT is greater than or equal to the RTC, a buy order is placed by the system for the number of shares specified by the GBQ. Otherwise, a sell order is placed for the number of shares specified by the GBQ.

The system of the present invention includes a virtual reserve bank program. The reserve bank program regulates the economy with monetary tools which are provided

within the reserve bank program module. With these tools, certain system global constants, such as total money supply and interest rates can be adjusted.

In the case of interest rates, adjustable global constants are built into the administration table 2016 for the virtual trading system. By raising or lowering rates, the amount of interest paid on the virtual dollars not tied up in securities is adjusted for the users. In this way, the unused money in users' accounts act as a money market accounts for which interest is adjusted accordingly.

Alternatively, a virtual reserve bank program chairman can determine interest rate and security threshold constants by using global interest threshold constants (GITCs) which monitor inflationary and deflationary pressures in the system. Inflationary and deflationary pressure may be defined as the size of the system economy, i.e., number of shares of securities which obtain a certain defined price. For example, the total outstanding shares may have a combined par value of VS8 billion, and the total market price for the shares outstanding may be V\$80 billion with about V\$5 billion average daily trading volume. The virtual specialist program, for the majority of securities in the system, may have set price movement thresholds to 10,000 positive and 10,000 negative. The money market rate may be set to 70% under these market conditions by the reserve bank program. However, if prices on the exchange were to inflate to a value of V\$200 billion, for example, price movement thresholds might be reset to 20,000 and 20,000 positive and negative respectively, and the money market interest rate reset to 15%.

Considering the vast cross-section of on-line users, comprising different interests, artistic tastes and economic buying powers, the system of the present invention further provides extremely useful information for entities such as market research firms, advertising agencies, investors, movie and television studios, phonorecord companies, radio stations and movie rental companies. Accordingly, for select market research users, an on-line market research tool is provided which allows the market research users to access statistical information about trader demographics, interests, beliefs, and/or tastes.

### **Overview Of Virtual Trading System**

The present invention comprises a computer-implemented trading system for derivative financial instruments ("derivatives"). The present invention accepts buy and sell

orders from traders for the derivative financial instruments, sets a market price based on the supply and demand, and participates in the market as a trader in order to minimize price volatility. In some embodiments, the present invention is a computer-implemented exchange for derivative financial instruments representing movies, talent, CDs, and television programs. In other embodiments, the present invention is a computer implemented exchange for derivative financial instruments that relate to one or more products in various stages of development. For example, a particular security may represent a product in the design stage, a product undergoing safety testing, a product being marketed, a product that is pending regulatory approval, and/or a product in any part of its life cycle. A company or business entity may use the computer-implemented exchange (“the exchange”) to obtain market research regarding the movie, talent, CD, program, product, and/or other entity underlying a particular derivative financial instrument.

As an example, a pharmaceutical company may use the exchange to gather opinion data regarding the likelihood that a particular drug will receive approval by a regulatory agency. To obtain the opinion data, the pharmaceutical company may configure the exchange to generate a derivative representing the particular drug that is pending approval. The pharmaceutical company may allow doctors, scientists, and/or other individuals or entities to participate as traders in the exchange. The exchange may monitor the trading activity of the traders, and based on the monitored trading activity, the exchange may generate market data. The market data may be usable to measure the extent to which the participating traders believe that the particular drug will receive regulatory approval. Thus, the exchange may facilitate research related to a product. In the foregoing example, the product is a new drug that is pending regulatory approval. It will be understood, however, that the exchange may generate derivatives based on any suitable product.

The computer-implemented exchange (“the exchange”) may be implemented as a simulation (i.e., game) or as an actual trading system for the derivative financial instruments described above. The derivative financial instruments may be purchased with dollars, with virtual currency that is controlled by a virtual reserve bank program, or with any suitable real or artificial currency.



The derivative financial instruments are identified by a Current Trading List displayed for the traders. In some embodiments, the Current Trading List comprises a list of movies in various stages of production, talent, and other entertainment-oriented assets. In other embodiments, the Current Trading List comprises a list of products in various stages of development or marketing. The list may comprise:

- name of the derivative financial instrument;
- number of shares in circulation;
- last trading price (printed every 15 minutes);
- price movement since the previous midnight (PST);
- 10 • price movement since the previous mid-day; and
- price movement year to date.

In an exchange that relates to derivatives based on movies and/or actors, the Current Trading List may further comprise the genre of the movie (action-adventure, mystery, western, comedy, etc.) and the production status of the movie (scripting, pre-  
15 production, filming, editing, release, home-video, etc.). In an exchange that relates to products, the Current Trading List may further comprise the stage of development of a product. For example, the Current Trading List may indicate whether a particular product associated with a security is in the design stage, is undergoing safety testing, is being marketed, is pending regulatory approval, and/or is in any other part of the product's life  
20 cycle. Similar information may be provided for other derivative financial instruments offered on the exchange. Traders may be able to view the Current Trading List sorted by:

- name, alphabetically;
- genre, alphabetically;
- productions status, alphabetically;
- 25 • most active (number of shares traded yesterday);
- biggest gainers;
- biggest losers; and
- fastest movers today (e.g., fastest 20 movers up and fastest 20 movers down).

Each trader's portfolio is identified by a Portfolio data structure that comprises the  
30 trader's account status. This information includes:

- the amount of cash in the trader's account (paid interest at the system discount rate plus some increment, compounded daily);
  - current percentage rate paid to cash;
  - the total value of held stocks at the last selling price;
  - 5     • the total value of held bonds at the last selling price;
  - total portfolio value (TPV) (cash+bonds+stocks);
  - percentage of TPV in cash;
  - percentage of TPV in bonds; and
  - percentage of TPV in stocks.
- 10     Traders can generate any number of different reports for display, including:
- lists of stocks and bonds being traded (see above);
  - index of total stocks (INDEX\_STOCKS) expressed as a number, with 1000 defined as the aggregate total stock price value on opening day, wherein  $INDEX\_STOCKS = (\text{today's gross stock-value}) / (\text{opening day gross stock-value})$ ;
  - 15     • index of total bonds (INDEX\_BONDS) expressed as a number, with 1000 defined as the aggregate total bond price value on opening day, wherein  $INDEX\_BONDS = ((\text{today's gross bond-value}) / (\text{opening day gross bond-value}))$ ;
  - index of total exchange (INDEX\_EXCHANGE) comprised of all stocks and bonds, and expressed as a number, with 1000 as the aggregate total stock price value on opening, wherein  $INDEX\_EXCHANGE = ((\text{today's gross market-value}) / (\text{opening day gross market-value}))$ ;
  - 20     • lists of the top market performers, e.g., the top 10 traders in percentage portfolio growth calculated as  $\text{net port-folio value-change} = (\% \text{ change of cash}) + (\% \text{ change of stocks}) + (\% \text{ change of bonds})$ , and for each of the categories: yesterday
  - 25     (midnight to midnight), last week (7 days, ending midnight, each Thursday), last month (closes at midnight last calendar day of month), last quarter (closes at midnight on last day of last month/ quarter), year-to-date (running daily total of percentage value changes)/(days year-to-date), and annually (closes at midnight on December 31 each year);
  - 30     • overall market condition report, including a list of stopped issues with:

- name;
- last trading price;
- time that stop-trade condition occurred;
- percentage the issue actually moved on-the-day before the stop-trade;
- 5 • number of total shares and/or bonds traded today;
- dollar value of total trades today;
- number of buy and sell trades today; and
- number of buy and sell trades this month.

Use of the above information will guide traders in making future buy and sell  
10 orders.

### **Hardware Environment**

With reference to FIG. 1, a block diagram illustrates an exemplary hardware environment for the preferred embodiments of the present invention. More particularly, a typical distributed computer system is illustrated, which uses the Internet 10 to connect  
15 client computers 12 executing for example, Web browsers, to server computers 14 executing a computer program embodying the present invention. A typical combination of resources may include client computers 12 that are personal computers or work stations connected via the Internet 10 to server computers 14 that are personal computers, work stations, minicomputers, or main-frames.

20 Generally, both the client computers 12 and the server computers 14 are comprised of one or more CPUs 16, various amounts of RAM storing computer programs 20 and other data, and other components typically found in computers. In addition, both the client computers 12 and the server computers 14 may include one or more monitors, and fixed or removable data storage devices 20 such as hard disk drives, floppy disk drives, and/or CD-  
25 ROM drives. Also, input devices, such as mouse pointing devices and keyboards, may be included.

Both the client computers 12 and the server computers 14 operate under the control of an operating system, such as Windows, Macintosh, UNIX, etc. Further, both the client computers 12 and the server computers 14 each execute one or more computer programs  
30 18 under the control of their respective operating systems. The present invention is

preferably implemented as one or more computer programs 18 executed by the server computer 14, although in alternative embodiments these computer programs 18 may also be executed on the client computer 12.

5 Generally, the computer programs 18 implementing the present invention are tangibly embodied in a computer-readable medium, e.g., one or more of the fixed and/or removable data storage devices 20 attached to the computer. Under control of the operating system, the computer programs 18 may be loaded from the data storage devices 20 into the RAM of the computer for subsequent execution by the CPU 16. The computer programs 18 comprise instructions which, when read and executed by the computer, causes  
10 the computer to perform the steps necessary to execute the steps or elements of the present invention.

Those skilled in the art will recognize that the exemplary environment illustrated in FIG. 1 is not intended to limit the present invention. Indeed, those skilled in the art will recognize that other alternative hardware environments may be used without departing  
15 from the scope of the present invention.

## **I. GENERAL LOGIC OF A FIRST EMBODIMENT OF THE TRADING SYSTEM**

With reference to FIG. 2, a flowchart illustrating the general logic of a first embodiment of the present invention is shown.

20 Block 200 represents the server computer 14 waiting for the next event to occur. Once the event occurs, control is transferred to blocks 202-224 to identify the event and respond accordingly.

Block 202 is a decision block that represents the server computer 14 determining whether it received a request to display data from the client computer 12. If so, block 204  
25 represents the server computer 14 transmitting data to the client computer 12 for subsequent display. The data transmitted for display preferably includes at least three types of data: the current list of trading derivative financial instruments, the trader's portfolio, and other reports generated by the server computer 14.

Block 206 is a decision block that represents the server computer 14 determining  
30 whether it received a request to submit a buy order from the client computer 12 for a

particular derivative financial instrument, e.g., stock or bond. If so, block 208 represents the server computer 14 processing the buy order by placing it in a queue in the memory of the server computer 14. The buy order is a data structure comprising:

- trader's account number;
- 5     • trader's name;
- the time and date of the order;
- the stock or bond to buy;
- the cash balance in the trader's account; and
- a text-field where the trader may enter the total number to buy (generally in
- 10       multiples of 100).

In a first preferred embodiment, the buy order waits in the queue for the expiration of a predetermined "sweep pricing cycle " The sweep pricing cycle occurs periodically, such as every 15 minutes, or during another specified time interval. The marked price the trader actually pays for the derivative financial instrument is determined by the aggregate

15 supply/ demand for the derivative financial instrument at the end of the sweep pricing cycle during which the order was placed.

The market price is set by the pricing/trading program executed by the server computer, which is described below in FIG. 3. The trader's account is then charged the market price for the derivative financial instrument. If the purchase uses up all available

20 cash in the trader's account, the trader is "loaned" enough money to pay for the purchase, and their account is charged interest at a predetermined rate, e.g., 18% a year compounded daily, on the negative account balance. The interest is charged against the trader's account until they accumulate more cash to zero out the balance, either by selling stocks or buying

dollars.

25       Block 210 is a decision block that represents the server computer 14 determining whether it received a request to submit a sell order from the client computer 12. If so, block 212 represents the server computer 14 processing the sell order by placing it in queue in the memory of the server computer 14. The sell order is a data structure comprising:

- 30       • trader's account number;

- trader's name;
- the time and date of the order;
- the stock or bond to sell;
- the amount of the stock or bond in the trader's account; and
- 5     • a text-field where the trader may enter the total number to sell (generally in multiples of 100).

In the first preferred embodiment, like the buy order, the sell order waits in the queue for the expiration of the predetermined sweep pricing cycle. The market price at which the trader actually sells the derivative financial instrument is determined by the aggregate supply/demand for the derivative financial instrument at the end of the sweep pricing cycle during which the order was placed. The market price is set by the pricing/trading program executed by the server computer, which is described below in FIG. 3. The trader's account is then credited with the market price for the derivative financial instrument.

15     The sell order can be either produced by a trader or generated by the server computer 14, as will be explained in more detail below. For a sell order produced by a trader, the trader views a list of stocks or bonds owned by the trader on a monitor attached to the client computer and chooses to sell a quantity at the market price.

When the trader requests to view the list of stocks, the server computer 14 transmits certain information to the client computer 12 for display, including, for each stock owned, the last trading price (LTP), the quantity of stocks, the purchase price, and the date purchased. Similarly, when viewing the list of bonds, the server computer 14 transmits certain information to the client computer 12 for display, including, for each bond owned, the last trading price (LTP), the interest rate being earned for each kind of bond, the quantity of bonds, the purchase price, and the date purchased.

25     Block 214 is a decision block that represents the server computer 14 determining whether an internal timer for the sweep pricing cycle has expired. If so, block 216 represents the server computer 14 processing the timer executing a pricing/trading program as described in FIG. 3.

Block 218 is a decision block that represents the server computer 14 determining whether it received a request to change the discount rate. If so, block 220 represents the server computer 14 executing a discount rate program. In order to add or subtract liquidity, the server computer 14 occasionally steps in to act as a virtual reserve bank program and adjust the discount rate. The discount rate may be adjusted based on any suitable data, such as, for example, the performance of a particular industry, earnings reports, changes in review standards, changes in application requirements, ticket sales, revenue, or any other suitable information. The discount rate may be adjusted to add or subtract liquidity to affect the growth of a particular market and/or industry. When the server computer 14 lowers the discount, all the bonds seem to be a better deal, because the bonds are paying a fixed rate interest that never changes. In the first preferred embodiment, this encourages traders to buy more bonds, and this surge in buying demand causes a correlated increase in bond prices as described above. The same thing happens to stocks, because traders are making less money on the interest being paid on the cash balance in their trading account. When the server computer 14 raises the discount, so the bonds seem to be a worse deal, since their advantage over the discount is smaller. Thus, the server computer 14 relaxes the buying pressures or demands for bonds, which should result in additional sell orders, or at least slow the buying of bonds, thus decreasing their prices as they trade in the market. Likewise, stocks seem less attractive, since traders could make more money by keeping cash in their accounts and getting interest on it.

Block 222 is a decision block that represents the server computer 14 determining whether it received a request to revise the derivative list. If so, block 224 represents the server computer 14 executing a listing program. The server computer 14 determines whether the list of derivatives trading in the system should be revised. The list could be revised to reflect new derivative offerings, expired derivatives, and delisted derivatives.

The initial price of a particular derivative may be based on the movie, actor, talent, product, and/or entity represented by the particular derivative. For example, the initial price for a derivative representing a movie may be based on estimates of the movie's potential box office revenue. As another example, the initial price for a derivative representing a movie may be based on subjective criteria such as, for example, the

reputation of the director, whether the movie is produced by a major or minor studio, the popularity of an actor in the movie, and/or any other suitable criteria. The initial price for a derivative representing a product may be based on one or more characteristics of the product. For example, if a derivative represents a new car under development, the initial price of the derivative may be based at least in part on the design costs of the new car, the expected manufacturer's suggested retail price (MSRP) for the new car, the expected horsepower of the new car, and/or any number and combination of objective and/or subjective criteria. For a bond representing talent on the exchange, the price of the bond may be based on the Hollywood Reporter's Star Power Index. A bond representing a talent with a low Star Power Index of 15 would be issued with a higher yield than a bond representing a talent with a high Star Power Index rating. It will be understood that the exchange may use any suitable number and combination of data and/or criteria to set prices for the derivative financial instruments.

In some embodiments, the exchange may automatically determine the initial price of a particular derivative. In other embodiments, one or more individuals (such as, for example, a panel of experts) may use any suitable objective and/or subjective criteria to determine the initial price of a particular derivative.

In some embodiments, a warrant with a strike price may be attached to the new derivative when it is offered. When the derivative and warrant are first issued, the warrant may be of no value until the strike price is reached. For example, for a stock based on a movie, the strike price may be reached after the movie grosses a certain level of revenue. When a derivative is delisted from the exchange, a stock due to the movie ending its production run or a talent due to retirement or death, for example, the warrants may be called and the traders may be paid the value of the warrants, thus providing off-balance sheet financing for studios.

### **Pricing/Trading Program**

With reference to FIG. 3, a flowchart illustrating the logic of the pricing/trading program of the present invention is shown. Block 300 represents the server computer 14 retrieving the buy and sell orders that have accumulated in the queue during the period since the prior sweep pricing cycle. Block 302 represents the server computer 14 matching



the buy orders with the sell orders, although it is likely than an identical number of buy and sell orders would not have accumulated in the queue during the period. Block 304 represents the server computer 14 executing the generate market price program described in FIG. 4 to determine the market price for the derivative financial instruments. After the market price is determined, block 306 represents the server computer 14 updating the traders' portfolios to reflect the buy and sell orders in the queue being processed at the market price. Block 308 represents the end of the pricing/ trading program.

### **Generate Market Price Program**

With reference to FIG. 4 a flowchart illustrating the logic of the generate market price program of the present invention is shown. One purpose of the generate market price logic is to generate a market price for a derivative financial instrument that reflects the demand or lack of demand for the derivative financial instrument in the market. Block 400 represents the server computer 14 measuring the imbalance between the buy and sell orders during the period since the prior sweep pricing cycle. Block 402 represents the server computer 14 determining the price movement of a derivative financial instrument caused by the imbalance in buy and sell orders. Block 404 represents the server computer 14 executing a virtual specialist program as described in FIG. 5 to provide stability and liquidity to the market. Block 406 represents the server computer 14 executing the stop trade program, as described in FIG. 6, to stop trading in a derivative financial instrument if the projected price movement is excessive during the trading day and threatens the integrity of the market for that instrument. Block 408 represents the server computer 14 setting the market price, which becomes the price the pricing/trading program uses to update the traders' portfolios. Block 410 represents the end of the generate market price program.

In measuring the imbalance between buy and sell orders, as represented by block 400, the absolute difference between the number of sells and the number of buys is defined as the net movement in sweep (NMS). A sweep increment variable (SIV) is defined as the increase or decrease in price caused by an incremental imbalance in the number of buy orders and sell orders. A lot movement variable (LMV) represents the incremental lot size

that will result in a price increase or decrease of one SIV. The projected price movement (PM) can be expressed as:  $PM=(NMS/LMV)*SIV$ .

For example, with 42,000 buy orders and 30,000 sell orders for a particular stock, the  $NMS=(42,000-30,000)=12,000$ . With  $SIV=\$0.25$  and  $LMV=5000$ , the price movement of the particular stock will be  $(12,000/5,000)*0.25=\$0.50$ . Thus, the market price of the particular stock will be \$0.50 greater than the last trading price.

One can easily see that, with such a pricing scheme, there is the potential for great volatility in the price of a derivative financial instrument and the eventual loss of investor confidence in the market mechanism. In the exchange, it may be possible for one or more individuals to pursue trading strategies that would purposely cause drastic price fluctuations.

In order to encourage growth and stability in the capital market regulated by the trading system of the present invention, a virtual specialist program is executed by the server computer, as represented by block 404 in FIG. 4. In executing the virtual specialist program, the server computer 14 regulates the trading by actively trading in the market out of a virtual specialist portfolio (VSP). In the first preferred embodiment, the virtual specialist program portfolio initially contains half of all the issued shares of each derivative financial instrument.

#### **Virtual Specialist Program**

With reference to FIG. 5 a flow diagram illustrating the logic of the virtual specialist program of the present invention is shown. Block 500 is a decision block that represents the server computer 14 determining whether or not the price movement during the sweep pricing cycle is greater or equal to an adjusted price movement threshold (APT). The APT is a constant in the memory of the server computer 14. If the APT is greater than the price movement, then the server computer 14 does not trade in the market. If the price movement is greater than or equal to the APT, then the server computer 14 trades out of a virtual specialist program portfolio. The level of trading by the server computer 14 is determined by the amount that the price movement exceeded the APT. The greater the price movement, the more shares the server computer 14 trades to offset the price movement.

In an exemplary embodiment of the present invention, the  $ATP=1.25$  and the server computer 14 performs the following steps: if  $PM=APT$  then the server computer 14 matches 20% of unmatched shares; if  $PM=APT+0.25$  then the server computer 14 matches 20% of unmatched shares; if  $PM=APT+0.50$  then the server computer 14 matches 30% of unmatched shares; if  $PM=APT+0.75$  then the server computer 14 matches 40% of unmatched shares; if  $PM=APT+1.0$  then the server computer 14 matches 50% of unmatched shares; if  $PM=APT+1.25$  then the server computer 14 matches 60% of unmatched shares; if  $PM=APT+1.50$  then 60 the server computer 14 matches 70% of unmatched shares; if  $PM=APT+1.75$  then the server computer 14 matches 80% of unmatched shares.

Block 502 represents the server computer 14 generating a buy or a sell order to offset the price movement. The buy or sell order generated by the server computer 14 is placed in the queue with the trader buy and sell orders to be processed during the next sweep cycle.

In the first preferred embodiment, since the virtual specialist program portfolio initially includes half of all the securities traded, the server computer 14 could eventually deplete the virtual specialist program portfolio or cause the virtual specialist program portfolio to own all the shares of a stock. In order to maintain a balanced virtual specialist program portfolio, and provide some-liquidity-to the market, the server computer 14 generates additional buy and sell orders to offset orders generated in response to the price movement exceeding the  $APT$ . Block 504 represents the server computer 14 generating timed buy and sell orders. In one embodiment of the invention, the server computer 14 assess each stock and each bond in the virtual specialist program portfolio. The server computer 14 determines the deficit or surplus in the item, and then place  $1/288$ th of the deficit as a "timed recovery order" into each successive 15 minute segment for the next 3 days. When the pricing/ trading program 255 matches buy and sell orders as represented by block 320, the pricing/trading program 255 includes any "timed recovery orders" outstanding for the last 3 days in the sweep. These orders are matched with the traders' buy and sell orders. Block 506 represents the end of the virtual specialist program.

### Stop Trading Program

FIG. 6 is a flow diagram illustrating the logic of the stop trading program of the present invention. Block 600 represents the server computer 14 determining the price movement of a stock caused by the imbalance in buy and sell orders. Block 602 represents the server computer 14 measuring the price movement on the day, not just during the sweep cycle period. Block 604 is a decision block that represents the server computer 14 determining whether the net price movement (NPM) within one "trading day" (i.e., midnight-midnight) is greater than 50% up or down. As represented by block 606, the buy and sell orders are removed from the queue if the net price movement is greater than 50% for a stock trading above \$20. At that point, the trading in that issue is stopped within the 15 minute period until further notice. All orders (buy and sell) for that stock during this sweep are unfilled. The trading has stopped due to "excessive order imbalance".

For example, assume that the Last Trading Price (LTP) for a particular derivative based on a particular movie is \$67 (+7.5 on-the-day). During one 15-minute sweep pricing cycle, the server computer 24 receives buy orders for 655,000 shares of the particular derivative. Also, the server computer 14 receives sell orders for 35,000 shares of particular derivative. The server computer 14 evaluates the price movement for the sweep pricing cycle, and tests it to see if the net projected price movement "on-the-day" is greater than 50%. If it would be greater than 50%, it stops trading in that instrument only. In this example, there is a net order-imbalance of 620,000 shares, which would create an up movement in price of  $(+620,000/5000) * \$0.25 = +\$31.00$ . Since the total movement on the day would be the \$7.50 so far plus the additional \$31.00, the net projected price movement on the day would be  $\$31.00 + \$7.50 = \$38.50$ . If the opening price that day was \$59.50, the percentage projected price movement for the day is  $\$38.50 / \$59.50 = 64\%$ . Since the projected net price movement would be greater than 50%, the trading is stopped for that instrument. If the projected price movement was less than 50%, the price of the instrument would be adjusted accordingly and trade in that stock continued. Block 608 represents the STOP TRADE order that issues regarding the particular stock. Traders who issued a buy or sell order for the stock are notified that the order has not been filled due to excessive order

imbalance during the trading day. Finally, block 610 represents the end of the stop trading program.

## **II. GENERAL LOGIC OF A SECOND EMBODIMENT OF THE TRADING SYSTEM**

5           As with the first embodiment described above, a second embodiment of the system of the present invention includes a database of securities provided for trading in an open, computerized, exchange. In some embodiments, securities are listed which relate to movies, actors, and/or service companies. In other embodiments, securities are listed which relate to products in various stages of development and/or marketing. Thus, the  
10 following description of the second embodiment focuses on the differences in functionality from the first embodiment, and may omit features which are nevertheless included in the second embodiment, but do not require further description.

### **System Component Overview**

With reference to FIG. 7, included within the system are a plurality of tables,  
15 including a global constant table 2022, price history table, 2020, net price movement table, 2008, security price table 2006, security constant table 2002, trade history tracking table 2010, net price movement balance table, 2012, ghost trading table 2014, administration table, 2016, and a user database table 2026, which are used as explained below. Exchanges based on derivatives such as movies or products may further comprise a  
20 development stage table 2024. Interfacing with these tables are the virtual specialist program, 2028, which passes economic and price control data between all of the tables, a reserve bank program, 2030, which passes economic control data between all of the tables, and the user interface, 700, which passes trade and portfolio information between itself and the user database as explained below. Also interfacing with all tables is a marketing tool,  
25 2040, as described below.

### **Administration Module**

With reference to FIG. 18, the system includes an administration module which is used, as explained below, to adjust constants and variables in the system. The administration module is password protected and implemented with browser interface 700,  
30 also described below.

### **User Registration And Login**

With reference to FIG. 1, users may access the system over a network, using a standard interface. An exemplary system comprises a Web client 12 connected to a network such as the Internet 10, which is connected to SQL compliant back-end database servers 14.

With reference to FIG. 8A, a standardized Web browser interface 700 may be used by the user to register with the on-line trading system over Internet 10, providing demographic information, such as first name, last name, age, sex, location, occupation, income, hobby interest, and the like. Once registered, the user is given the option of choosing a unique userID which will be used for logging in after registration. In providing the demographic information, the user also provides an e-mail address to which a randomly assigned password and other instructional information can be forwarded.

With reference to FIG. 8B, once the user is registered, the first time user's default portfolio may be accessed using a temporary password free login by selecting the View Portfolio button 802 in the upper left hand corner of a Welcome Web page 804.

With reference to FIG. 9, after the user has received their permanent password, the system can be accessed over Internet 10 (FIG. 1) using Internet browser 700 by selecting a start button 902 present on a Web home page 804 for the system.

With reference to FIG. 10, the user is presented with their portfolio on Web page 700. Automatically, the new user is provided with a fixed quantity of virtual currency 1002 in virtual dollars (V\$) from a reserve bank program, described below, to begin trading with. This quantity can either be considered a loan from the reserve bank program, for which interest is charged, or a gift.

After logging in, the user's portfolio summary 1004 is displayed at the top of the page, which displays the user's current cash balance 1002, amount held in stocks 1006, bonds 1008, and other types of securities. When a new user logs in, the cash value of the user's portfolio is usually represented solely in cash 1002, or in a money market account. However, sometimes the system may award new users a free security holding up front, for example comprising bond securities 1008. The cash in the user's portfolio accrues at an interest rate set by a virtual reserve bank program.

### **Trade Orders**

The user may trade security instruments by typing in the symbol 1012 for the instrument for which a purchase is desired in a buy-sell area of page 1010. A quantity 1014 is also specified in buy sell area 1010. If the user does not know the symbol for a particular instrument, a lookup or search function is provided in a symbol search area 1016 of the screen using standard graphical user interface (GUI) features such as drop-down list boxes, text search boxes, or slider bar lists. Alternatively, a ticker tape style updating menu 1018 at the bottom of the screen displays available instruments with the corresponding instrument prices.

Once the user has successfully entered the symbol 1010 for an available instrument, and a quantity 1014, a buy button 1020 may be pressed in buy-sell area 1010. With reference to FIG. 11, if the user has enough cash on account, and if the instrument is available for trading, then a confirmation screen 1102 appears before execution of the trans-action. Upon confirmation, the trade is executed, and the cash is debited from the user's cash account 1002 (FIG. 10).

With reference to FIG. 10, if the user wishes to sell a security instrument, the same procedure is followed for placing a buy order described above, except, a sell button 1022 is clicked on in buy-sell area 1010 of the portfolio page 1004. After confirmation, the market price for the shares sold is added to the user's cash account 1008, and the shares are made available in the system for fulfilling purchase orders.

### **Virtual Specialist Program**

The system includes a virtual specialist program which, among other things, handles fulfillment of buy and sell orders. In the second embodiment of the present system, the virtual specialist program controls the economy, and provides it with liquidity. The virtual specialist program provides instantaneous liquidity by fulfilling all orders, whether or not there are equal and matching sell orders to offset buy orders, and vice versa.

With reference to FIG. 12a a flow chart is shown illustrating the calculations performed by the virtual specialist program for determining an initial security price. The virtual specialist program calculates the initial price in a public offering for a new security to be listed on the exchange based on administrator entered values. A system administrator,

through a password protected administration module, is able to set up a new security for listing on the exchange. The exchange may set and manage the price of a derivative according to the nature of the underlying entity (e.g., movie, actor, product, and so forth). For example, the exchange may set and manage the price of a derivative based on a movie differently than the exchange sets and manages the price of a derivative representing a product that is undergoing safety testing.

***Derivatives Based on Movies, Talent, Products, and/or Service Companies***

In the case of films listed in the exchange described above, one way to determine price is by stage of production of the movie. Each movie has an associated estimated gross box office performance. An administrator is allowed to enter the estimated gross box office performance (EGBO) for the security, step 1202, in the administration screen. The administrator enters a quantity for the number initial of shares (NIS) issued for the security, step 1204. The number of shares issued is a hypothetical number since the virtual specialist program of the second embodiment does not actually keep any shares in reserve. The user also enters a code for the stage of production for the movie (described below), step 1205. The virtual specialist program takes the EGBO, and divides it by the NIS to determine a raw initial share price (RIS), step 1206.

The initial share price (ISP) is then adjusted by a stage of production factor. The following is a description of the different stages of production for a movie, with the code format entered by the administrator:

- C=Concept: During a movie's concept stage, there is not active production yet. Rumors are heard about a 'new' project; maybe a sequel to an existing movie or a book adaptation.

- D=Development: During a movie's development stage, the project has attracted interest, and funds are spent on developing the idea further. The final script premise is being perfected.

Pre-conceptual design work is taking place. More crew and actors are dedicating themselves to the project in this stage.



- P=Production: The project has moved to active production. All of the crew and stars have been selected, and principal photography is scheduled or commenced. The release date starts to become fixed.
- W=Wrap: The movie has been completed in its entirety, and is awaiting release. The release date may have been pushed back a short time, maybe a number of weeks or months, to an unscheduled future date, awaiting a more favorable window of opportunity for commercial success.
- R=Release: The movie is playing in theaters.

When a movie is in the concept stage, it is much more difficult to determine the likelihood of success for the movie than when the movie is in the production, wrap, or release stage. The production cycle relates to a continuum of success, beginning with the concept stage, where it is more difficult to judge potential success, and ending with the release stage, where actual box office receipts can be observed to more accurately determine the potential success of a movie. Thus, when determining the initial success of a movie, the RIS should be reduced accordingly.

Starting with step 1208 (FIG. 12a), the virtual specialist program checks to see if the movie is in the concept stage. If so, then the price of the security is multiplied by an administratively set concept factor for movies in the concept stage, step 1210.

The virtual specialist program checks to see if the movie is in the development stage, step 1212. If so, then the price of the security is multiplied by an administratively set development factor for movies in the development stage, step 1214.

The virtual specialist program checks to see if the movie is in the production stage, step 1216. If so, then the price of the security is multiplied by an administratively set production factor for movies in the production stage, step 1218.

The virtual specialist program checks to see if the movie is in the release stage, step 1224. If so, then the price of the security is set to the raw unchanged RIS, step 1226.

It should be recognized by one skilled in the art that the above described factors are not the only factors which could be used in adjusting the RIS. For example, the RIS could be adjusted by such factors as an industry box office index of the movie's cast, an industry popularity index for the cast, an estimated budget, actual budget, or the release season for

the movie. Further, it should be recognized that different factors will be used for product, actor, or service company securities to determine initial price.

The calculated initial price for a movie is not statically tied to the above formula. Regardless of the estimated price determined by the above factors, in the system of the second embodiment, the price is further adjusted after release of the movie. On the morning following a movie's release date, trading for the movie stock is halted. Trading is allowed to continue at the end of its opening weekend at an adjusted price that is based on the following formula:

(opening weekend box office gross/1 MM)\*(a historic multiplier for total domestic gross)

By historic observation, the ideal historic multiplier value for the second embodiment of the present invention has been found to be 3.6.

The initial price for a bond in the market is determined in a similar way as with stocks. In the case of movie stars listed in the exchange described above, one way to determine price is by historical performance of movies the star has starred in.

In the exchange, individual actors are available for investors in the form of star bonds. Star bonds pay interest depending on a star's rating. Ratings are determined by a star's 36 month trailing average gross (TAG). TAG is the trailing average box-office gross of the movies a star has been in during the preceding 3 years. TAG values and ratings correspond to one of 11 classes: AAA, AA, A, BBB, BB, B, CCC, CC, C, U, and D. Each one of the 11 star bond ratings classes corresponds to a virtual dollar interest rate or coupon rate (see chart below). The rating and coupon for an individual actor in the second embodiment of the system of the present invention is determined according their TAG value as follows:

AAA	average gross: more than \$100 million	Coupon: V\$60
AA	average gross: \$75-99.9 million	Coupon: V\$80
A	average gross: \$50-74.9 million	Coupon: V\$100
BBB	average gross: \$40-49.9 million	Coupon: V\$140
BB	average gross: \$30-39.9 million	Coupon: V\$160
B	average gross: \$20-29.9 million	Coupon: V\$180

CCC	average gross: \$15-19.9 million	Coupon: V\$220
CC	average gross: \$10-14.9 million	Coupon: V\$240
C	average gross: \$5-9.9 million	Coupon: V\$260
U (unrated)	average gross: less than \$5 million	Coupon: V\$300
5 D (default)	average gross: none	Coupon: V\$0

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Investors in star bonds receive a 6th of the coupon interest per bond, each day. The % annual rate of return, or current yield is calculated by dividing the V\$ coupon rate by the current price. Low rated star bonds denote high risk. The daily V\$ payment of low rated star bonds is high to compensate traders for taking the risk of owning a low rated star bond. A high rating, such as AAA, denotes just the opposite.

The system is programmed under the principle that some traders buy star bonds whose rating is low in anticipation of the star's appearance in an upcoming blockbuster, raising the TAG (Trailing Average Gross), rating and price. Conversely, traders sell star bonds whose rating is high in anticipation of the star's appearance in an upcoming flop, lowering the TAG, rating and price.

A star bond with a U rating means that the bond is un-rated and a rating of D means that the bonds is in default.

Throughout the year, the system administrator updates TAG values, and thus, class ratings, as box office results are reported. Each Thursday, as new box office data is reported, the virtual specialist program sweeps the star bond market, looking for bond ratings which need to be-updated. Because a star bond's value is based on the cumulative performance of a movie, the virtual specialist program uses a 1.24 multiplier of the gross to date to estimate the movie's total gross after four weekends.

Alternatively, the price for bonds may be determined in a number of ways. One way a bond price may be determined is by assigning a box office index to the bond, which is based on the bond rating, and multiplying the index by a constant to obtain the price. Using this method, the bond rating can be adjusted by other factors, such as the number of films the bond's associated star has appeared in, the length of the star's career, the relative

billing the star receives for the individual films that the star has appeared in, and the public's morality perception of the star. All of these factors are administratively set by the system administrator, and are then multiplied together with the box office index to obtain an adjusted box office index. The bond rating is then determined using the adjusted box office index.

Another way of determining an initial bond price is to determine the initial value in the same way the other security prices are determined as described above; namely by using a number of market factors, while determining future prices for bonds in the same way that other security prices are adjusted by the virtual specialist program as described below instead of using tradition fixed bond par values.

With respect to non-bond securities in the second embodiment of the system of the present invention, the virtual specialist program stores a running net movement balance (NMB) representing the quantity of securities for orders that the virtual specialist program fulfills which do not have any offsetting orders. The imbalance is stored as a positive number if the buy-sell imbalance represents more buy trade orders executed than sell orders, or a negative number if the buy-sell imbalance represents more sell orders executed than buy orders.

#### ***Derivatives Based on Products***

In some embodiments, the exchange may facilitate trading of derivative financial instruments representing one or more products in various stages of development and/or marketing. For example, a particular security may represent a product in the design stage, a product undergoing safety testing, a product being marketed, a product that is pending regulatory approval, and/or a product in any part of its life cycle. A company or business entity may use the exchange to conduct market research regarding a product represented by a derivative. The market research may be based on the trading activity of traders participating in the exchange. For example, an airline may use the exchange to research whether to begin offering flights to a particular city. To conduct the research, the airline may configure the exchange to generate a derivative representing a ticket for a flight to the particular city. The airline may allow employees, frequent flyers, and/or other individuals or entities to participate as traders in the exchange. The exchange may monitor the trading

activity of the traders, and based on the monitored trading activity, the exchange may generate market data. In the present example, the market data may be usable by the airline to measure the extent to which the traders believe that flights to the particular city will be popular and/or profitable. Thus, the exchange may facilitate market research and other types of research related to a product. In the foregoing example, the product is airline service to a particular city. It will be understood, however, that the exchange may be operable to generate derivatives based on any suitable number and combination of products.

According to certain embodiments, the exchange may set initial prices for derivative financial instruments; determine a number of derivatives to sell; adjust and maintain prices associated with derivatives; and manage the trading of derivatives among traders. The exchange may be configured to define a group of traders that may participate in trading via the exchange. The group of traders may be defined by any suitable number and combination of characteristics. For example, the defined group may represent employees of a particular company, distributors of a particular type of product, suppliers of product components, and/or any suitable group. Because the exchange may be configured to define who may participate in the exchange, the exchange may be used to control the source of market data obtained by the exchange.

In some embodiments, the exchange may require an individual to have a configurable passcode in order to participate in trading via the exchange. The passcode may represent a password, access key, and/or any suitable means for verifying whether an individual may participate in the exchange. In some embodiments, the individual may “win” a passcode by purchasing a product. For example, a passcode may be printed on the underside of bottle caps of certain bottles of a particular beverage. Thus, the exchange may provide incentives for individuals to purchase a particular product to have an opportunity to participate in the exchange. By allowing entities to associate products with the exchange, the exchange may provide entities with advertising opportunities. In the foregoing example, by purchasing more bottles of the particular beverage, an individual may increase his or her chances of obtaining a bottle cap having a passcode to participate in the exchange. In other embodiments, the passcode may be printed inside a candy

wrapper, inside a box of cereal, and/or on a scratch-off card associated with a product. Although the foregoing examples illustrate a passcode associated with a product, the passcode may be associated with a service such as, for example, a cellular phone service, a music download service, an internet service, and/or any suitable service. In such  
5 embodiments, the passcode may be sent to selected individuals electronically, via email, in print, and/or via any suitable media.

In some embodiments, the exchange may allow anyone to participate as a trader in the exchange. For example, a group of friends, associates, and/or colleagues may form a league to compete against one another as traders. The exchange may allow traders to form  
10 leagues or groups. By forming leagues, traders may be able to compete against other traders in their league to determine, for example, which trader can build the most valuable portfolio and/or which trader may attain a configurable goal.

The exchange may be associated with a business entity. The business entity may be a corporation, company, agency, office, individual, manufacturer, partnership, and/or  
15 any other suitable entity. The business entity may configure the exchange to facilitate trading of derivatives representing one or more products. For example, the business entity may be a car manufacturer. When the car manufacturer is preparing to release a new line of cars, the car manufacturer may use the exchange to obtain market research related to the new cars. In particular, the exchange may generate a plurality of derivatives wherein each  
20 derivative represents a particular model in the new line of cars. The exchange may then issue the derivatives to traders and facilitate the trading of the derivatives among the traders. The exchange may monitor trading and gather data related to the derivatives. In the present example, the exchange may display and/or transmit the gathered data to the car manufacturer, which may use the gathered data to evaluate the new line of cars. For  
25 example, the car manufacturer may use the gathered data to determine which new car models will likely be the most popular, to estimate the number of cars to manufacture, to formulate marketing strategies, and so forth. The foregoing example illustrates an exchange wherein the derivatives are based on a new line of cars. It will be understood, however, that the derivatives may represent any type of product.

The exchange may be operable to determine an initial price for each derivative. The initial price of a particular derivative may be based on the product associated with the derivative. For example, if the derivative represents a new car under development, the initial price of the derivative may be based at least in part on a characteristic of the new car. The characteristic may be the anticipated MSRP of the new car, the cost of materials for the new car, the safety features of the new car, and/or any number and combination of objective and/or subjective criteria. As another example, if the derivative represents a new drug, the initial price associated with the derivative may be based on one or more characteristics of the new drug. The characteristic may be test results, active ingredients, drug interactions, costs, and/or any suitable characteristic. Thus, the initial price of a derivative representing a particular product may be based on one or more characteristics associated with the particular product.

In some embodiments, the exchange may set the initial prices of a plurality of derivatives to be equal. For example, if each derivative represents a different model in a new line of cars, then the exchange may set the initial prices of the derivatives to be equal.

In some embodiments, the exchange may automatically determine the initial price of a particular derivative. In other embodiments, one or more individuals (such as, for example, a panel of experts) may use any suitable objective and/or subjective criteria to determine the initial price of a particular derivative.

The exchange may determine a number of shares to issue for each derivative. In some embodiments, the determination may be based at least in part on an estimate of how many traders will participate in the exchange. In other embodiments, the number of shares issued may be a hypothetical number since the virtual specialist program may not actually keep any shares in reserve.

In some embodiments, upon registering with the exchange, a trader may receive a configurable amount of virtual currency. The exchange may display to the trader the derivatives that are currently available for trade. Based as least in part on the displayed information, the trader may submit one or more buy orders to purchase one or more derivatives. Upon receiving the one or more buy orders, the exchange may transfer the

requested number of shares to the trader. The exchange may automatically debit an account associated with the trader according to the price of the purchased shares.

Once traders begin to trade derivatives, the prices of the derivatives may fluctuate based on supply and demand of the various derivatives. In some embodiments, the virtual specialist program is operable to occasionally adjust the prices associated with the derivatives. The price adjustment of a particular derivative may be based on a result associated with one or more stages of development of the underlying product. For example, if a derivative represents a new drug pending regulatory approval, the exchange may adjust the price of the particular derivative after a particular stage of the approval process. The price adjustment may be based on results (e.g., test results, feedback, etc.) received during the particular stage of the approval process. As another example, if a derivative represents a new car under development, the exchange may adjust the derivative price after a particular stage of the development process. The price adjustment may be based on results (e.g., retooling costs, safety evaluations, etc.) received during the particular stage of the development process.

In the foregoing example, the virtual specialist program adjusts derivative prices. In some embodiments, however, the virtual specialist program may not adjust derivative prices. The exchange may be configured to allow derivative prices to fluctuate without the influence of the virtual specialist program.

In some embodiments, the exchange may regulate the contents of a particular trader's portfolio. For example, a trader may not be allowed to own more than a configurable percentage of the shares of a particular derivative. As another example, a trader may not have more than a configurable percentage of his or her shares associated with a single derivative. It will be understood that the exchange may impose any suitable number and combination of regulations on traders participating in the exchange.

In some embodiments, the exchange may be configured to detect or determine when a particular product represented by a derivative does not succeed in a particular stage of development or sales. In some embodiments, if the derivative represents a product that is pending regulatory approval, the exchange may consider that the product does not succeed if the product does not receive regulatory approval. In other embodiments, if the



derivative represents a product being designed, the exchange may consider that the product does not succeed if the product design is abandoned before being manufactured or released for sale. In yet other embodiments, if the derivative represents a product being marketed, the exchange may consider that the product does not succeed if a configurable number of the product is not sold. It will be understood that a derivative may represent any number and combination of suitable products. Thus, the exchange may be configured to determine success based on any suitable number and combination of criteria associated with a product represented by a derivative.

According to certain embodiments, if the exchange determines that a product does not succeed in a particular stage of development or sales, the exchange may adjust the price of the derivative representing that product. In some embodiments, the exchange may reduce the price of the derivative to zero. In other embodiments, the exchange may reduce the price of the derivative by a configurable amount. The configurable amount may be based at least in part on the stage of development or sales in which the product did not succeed. An example illustrates certain embodiments of the present invention. If a derivative represents a new car under development, the exchange may adjust the price of that derivative if the car manufacturer decides to abandon and/or not pursue the development of the new car. As another example, if a derivative represents a new drug that is pending Food and Drug Administration (FDA) approval, the exchange may adjust the price of that derivative if the regulatory agency rejects the application for approval. By adjusting prices of derivatives according to the success of the underlying products, the exchange may create incentives for traders to attempt to predict which products will be successful in various stages of development, such as, for example, safety testing, marketing, regulatory approval, sales, and so forth.

In some embodiments, the exchange may determine a maximum and/or a minimum “cash-out” or redemption value for each derivative. A maximum redemption value for a particular derivative may be the maximum value for which a trader may buy, sell, and/or redeem a share of that derivative. Similarly, a minimum redemption value for a particular derivative may be the minimum value for which a trader may buy, sell, and/or redeem a share of that derivative. The exchange may adjust the maximum and/or minimum

redemption value of a particular derivate after each stage of the contest. For example, if the product represents a new car that is being developed, the maximum redemption value during the first stage of development may be \$50. At the start of the second stage of development, the exchange may increase the maximum redemption value for a share of the derivative to \$100. The exchange may determine the maximum and/or minimum redemption value for a particular derivative based on any suitable criteria. For example, the maximum and/or minimum redemption value may be based on the stage of development of a product, the number of traders, and/or any other suitable factor. In the foregoing example, the exchange doubled the maximum redemption value from the first stage of development to the second stage of development. It should be understood, however, that the exchange may adjust the maximum and/or minimum redemption values for derivatives in any suitable manner.

The exchange may be configured to generate market data based on trading orders submitted by traders. The market data may represent trading volumes, market prices, trends, and so forth. The exchange may be configured to display and/or transmit the market data to a business entity associated with a product underlying a derivative. The business entity may use the market data to perform market research, which is discussed in further detail below.

The exchange may be operable to conduct a competition among traders. In some embodiments, the exchange may configure the competition to begin when the exchange generates one or more derivatives. The exchange may conclude the competition at a configurable point in time, after a particular event, or after a configurable condition is satisfied. In some embodiments, at the conclusion of the competition, the exchange may award prizes to one or more traders based at least in part on their portfolios. For example, the exchange may award a prize to the trader having the most valuable portfolio based on current market values of derivatives.

The foregoing examples illustrate derivatives based on products. In some embodiments, however, the exchange may facilitate trading of derivatives based on events. The events may comprise political events, elections, social events, military events, and/or any suitable event. For example, if the event associated with the exchange is a political

election, the derivatives may represent candidates in the election. In this example, traders may buy and sell derivatives based how the traders believe the candidates will perform in the election. As another example, the event associated with the exchange may be a military event such as, for example, the capture of a particular criminal. In this example, the derivatives may represent dates or time periods within which the criminal may be captured. Accordingly, the traders may buy and sell the derivatives based on when the traders believe that the criminal will be captured. In other embodiments, a particular derivative may represent a result of the military event such as, for example, the capture of an entity, the failure of an attack, the start of a revolution, and/or any suitable result associated with a military event. As another example, the event associated with the exchange may be an investigation and a particular derivative financial instrument may represent a public figure associated with the investigation. Thus, the exchange may be associated with any suitable number and combination of events.

By monitoring the trading activities of traders, the exchange may generate opinion data related to a political, social, military or other event. For example, if a particular derivative represents a candidate in an election, the exchange may determine that an increase or decrease in the market price of that derivate indicates an increase or decrease in the popularity of the candidate represented by that derivative. As another example, if a particular derivate represents a potential result of a military action, then the exchange may monitor the trading activity associated with that derivative to determine the level of trader confidence in the military action. Although the foregoing examples illustrate an exchange based on a political election or a military event, it will be understood that the exchange may be based on any suitable number and combination of events.

The exchange may store a running net movement balance (NMB) representing the quantity of securities for orders that the virtual specialist program fulfills which do not have any offsetting orders. The imbalance is stored as a positive number if the buy-sell imbalance represents more buy trade orders executed than sell orders, or a negative number if the buy-sell imbalance represents more sell orders executed than buy orders.

FIGURE 12b illustrates a flowchart for managing an exchange of derivatives based on products according to one embodiment of the present invention. At step 1252, the

exchange generates derivatives corresponding to a plurality of products. At step 1254, for each product, the exchange determines an initial price for the derivative financial instrument representing the product. The determination of the initial price may be based at least in part on costs, test results, stage of development, performance, and/or any other suitable characteristics associated with the particular product. At step 1256, the exchange determines how many shares of each derivative to offer for sale to traders. The number of shares offered for sale may be based at least in part on an estimate of the anticipated number of traders that will participate in the exchange.

At step 1258, the exchange displays to traders the derivatives and the associated prices. The exchange may also display product information such as, for example, specifications, costs, performance data, and so forth. At step 1260, the exchange receives from a trader at least one trading order for a particular derivative. The trading order may specify a number of shares of the derivative as well as a bid or offer price. At step 1262, the exchange executes the received trading order. At step 1264, the exchange determines whether a configurable stage associated with the product has been completed. In some embodiments, a configurable stage may represent a stage in a regulatory approval process or a stage of development of a product.

If at step 1264 the exchange determines that the configurable stage has not yet been completed, the process returns to step 1260. However, if at step 1264 the exchange determines that the configurable stage has been completed, then at step 1266 the exchange adjusts the prices of derivatives associated with the plurality of products. The price adjustment for a particular derivative may be based at least in part on data associated with the product represented by the particular derivative. At step 1268, the exchange determines whether a competition associated with the exchange has concluded. The competition may be a contest among traders to develop the most valuable portfolio of derivatives based on current market prices. If at step 1268 the exchange determines that the competition has not concluded, then the exchange returns to step 1260. However, if at step 1268 the exchange determines that the competition has concluded, then at step 1270 the exchange determines the particular trader that has the most valuable portfolio. At step 1272, the exchange may award a prize to the particular trader with the most valuable

portfolio. In some embodiments, the exchange may award multiple prizes to multiple traders based on the value and/or assets of the portfolios of the traders.

***Determining Price Movement of a Security***

5 With reference to FIG. 13, a flowchart illustrating the calculations for determining price movement of a security is shown. Unlike trading non-virtual markets, the virtual specialist program of the second embodiment does not control the economy by setting prices of shares based on last executed buy order price. Rather, the virtual specialist program determines the price of an instrument after each trade by computing an outstanding buy-sell imbalance. The system scans or sweeps a trade queue containing the  
10 data for buy and sell orders placed by users for price adjustment, step 1302.

The buy-sell imbalance for the security, also referred to herein as the net movement balance (NMB) is read from a net movement balance database where net movement balances for all securities are tracked, step 1304. The virtual specialist program controls security prices by incrementing or decrementing security prices based on the NMB using a  
15 combination of a security price increment (SPI) constant, and a pair of security price threshold constants. Both a positive security price threshold (PSPT) constant, and a negative security price threshold (NSPT) constant is set in a security constant table 2002 for each security in the system by the system administrator.

When a user executes a trade, a record is added to the trade queue. As a field in the  
20 trade record, a net trade movement (NTM) variable for a trade order is set to the positive quantity of shares if the trade order is a buy order, and to the negative quantity of shares if the trade order is a sell order, step 1306. A new NMB is calculated by adding the pre-trade NMB, as retrieved from a net price movement table 2008 (NMB (old)), to the NTM, step 1308.

25 The NSPT and PSPT constants for the securities are retrieved the security constant table 2002, step 1310. A security price increment (SPI) constant for the security which is the subject of the trade order is retrieved from the security constant table 2002, 1312. The NMB is then compared to the PSPT, step 1314. If the NMB is greater than the PSPT, then the price for the security (SP) is calculated by adding the SPI to the SP before the trade

which was retrieved from a security price table 2002, step 1316. The NMB is then reduced by the PSPT and stored back to the net price movement table 2008, step 1318.

Conversely, if the NMB is less than the NSPT (a negative value), step 1320, then the SP (new) is calculated by subtracting the SPI from the SP (old), step 1322. The NMB is then incremented by the NMB (which is also negative in this case), step 1324.

After the above calculations are made, the SP is stored in a security price table 2006, step 1326, which keeps track of all security prices. If the price of the security changed, a price history tracking table 2020 is updated, performing a write SQL statement which adds a record comprising the SP, NMB, UserID, and other information relating to the trade, step 1328. The NMB is updated in the net movement balance table 2008 for the security that was the subject of the trade order, step 1330. Each record of the net movement balance database further contains an increment tracking field for keeping track of the number of consecutive increments for the security instrument, up or down. Aside from the virtual specialist program, the stored information is used by a marketing tool, explained below, which provides statistical information to market researchers.

The last steps for processing a trade record are to call the security brake check routine, step 1332, and the security halt check routine, step 1334, both explained in detail below.

Periodically, due to natural popularity of a particular security, or by market manipulation by an individual or groups of traders, a security may realize wild fluctuations in price. This is especially true in a market in which virtual currency is used in a virtual market. Given the special circumstances of the virtual market, the system provides an artificial price control, or braking, mechanism.

The braking mechanism of the present invention monitors each price increment the virtual specialist program performs. When a price moves up or down on a security instrument, the increment tracking field of the net movement balance table 2008 is retrieved for the security, step 1402. A security brake threshold (SBT) constant, and a security brake increment (SBI) constant is retrieved from the security constant table 2002, steps 1404-1406. If the total consecutive number of price increments (TCPI) is greater than the SBT, step 1408, then the PSPT is increased by the security brake increment, and then

stored back to the security constant table 2002, step 1410. If the total consecutive number of price decrements is greater than the SBT, step 1412, the NSPT is decreased by the security brake increment, and then stored back to the security constant table 2002, 1414. In this way, for securities which have experienced price movement greater than the set  
5 thresholds, the price movement will be slowed.

Still, the braking mechanism may not be effective enough in either an extreme bear or bull market for the security, or the market as a whole. In those instances, a halting mechanism is provided by the system. With reference to FIG. 15, a flowchart illustrating a process for preempting trading for certain securities with out of control price movements is  
10 shown.

The halting mechanism acts much in the same way as the braking mechanism. The TCPI or TCPD is retrieved for the security which was the subject of the trade order above from the price tracking history table 2020, step 1502. The exception is that a security halt threshold (SHT) constant is compared to the value from TCPI/TCPD field, step 1504. If  
15 the TCPI/TCPD field value exceeds the SHT, steps 1506 or 1508, then trading is halted for that particular security, step 20 1510. A notice appears on screen for a trader who tries to trade the security informing the user that trading has been halted by the system. Trading for the security may be resumed after an administratively set period of time, or manually through an administration module.

20 With reference to FIG. 16, a ghost trading system process is illustrated. The ghost trading system of the second embodiment is used as both a tool to bolster the trading level of some securities which would otherwise have low trading levels and, more importantly, as a means for the system administrator to take control of the economy after changing thresholds, constants and global variables. The ghost trading system is used to speed up the  
25 actions of the economy by creating volume that, when processed with new variables changes the direction of the market quickly.

For each of certain selected securities, a ghost trading mechanism randomly creates automatic or ghost trades. A ghost trading table 2014 is provided with a timer, which reads the system clock and determines daily time intervals, is included. The system periodically  
30 queries the ghost trading table 2014, step 1602. Each security instrument record in 40 the

ghost trading table 2014 is set to cause a trade for an administrative set number of times per trading day. If the timer detects that the time interval between trades for a security has ended, step 1604, the ghost trading mechanism retrieves a ghost buy probability (GBF) from the ghost trade table 2014, step 1606. A random trade constant (RTC) is generated by the system, 1608. Next, a ghost security buy/sell quantity (GBQ) is retrieved from the ghost trade table 2014, step 1610. If the GBT is greater than or equal to the RTC, step 1612, a buy order is placed by the system for the number of shares specified by the GBQ, step 1614. Otherwise, a sell order is placed for the number of shares specified by the GBQ, step 1616.

10 In the above discussion, the term trade or the term trade order also includes stop limit orders and short sells. The only difference in these types of trades is when the actual trade is posted. In the case of a stop limit order placed by a user, for example, when the user specifies the condition in which the trade should take place, the stop limit order is stored in a stop limit order queue. Each time a security changes price, the stop limit queue is checked by the virtual specialist program to see if any stop limit conditions are met. If so, the normal trade queue is updated with the stop limit order, and the virtual specialist program performs the trade as with a normal trade.

### **Virtual Reserve Bank Program**

20 The system of the present invention includes a virtual reserve bank program. The reserve bank program regulates the economy with monetary tools which are provided within a reserve bank program module. With these tools, certain system global constants, such as total money supply and interest rates can be adjusted.

25 In the case of interest rates, adjustable global constants are built into the an administration table 2016 for the virtual trading system. By raising or lowering rates, the amount of interest paid on the virtual dollars not tied up in securities is adjusted for the users. In this way, the unused money in users' accounts act as money market accounts for which interest is adjusted accordingly.

30 In the second embodiment, a virtual reserve bank program chairman can determine interest rates and security threshold constants by using global interest threshold constants (GITCs), and acts as a monitor of inflationary and deflationary pressures in the system.



Inflationary and deflationary pressure may be defined as the size of the system economy, i.e., number of shares of securities which obtain a certain defined price. For example, the total outstanding shares may have a combined par value of V\$8 billion, and the total market price for the shares outstanding may be V\$80 billion with about V\$5 billion average daily trading volume. The virtual specialist program, for the majority of securities in the system, may have PSPTs set to 10,000 and NSPTs set to -10,000. The money market rate may be set to 7% under these market conditions by the reserve bank program. However, if prices on the exchange were to inflate to a value of V\$200 billion, for example, the PSPT might be increased by 10,000 and the NSPTs decreased by 10,000, and the money market interest rate reset to 15%.

As part of maintaining a sound economy, the system's virtual reserve bank program and/or the virtual specialist program may monitor certain inflationary thresholds and trigger a drain of the system if those thresholds are met. During a system drain, users are offered the opportunity to exchange virtual dollars into U.S. Dollars for exchange of goods and/or services. The drain will have the effect of taking virtual currency out of the system, thus helping to control inflation. Executing the drain comprises comparing the overall currency and/or security holdings to a drain constant administratively set in the global constant table 2022. When the global constant has been reached or exceeded, users are offered the opportunity to purchase products, such as software or mail order products, with their virtual dollars. For the users who choose to do so, the cost of the products are debited from their accounts and orders are added to a product fulfillment database designating that the offered products need to be sent to the user. Similarly to the order tracking database, the orders are stored in a drain history database so that statistical information can be drawn in the marketing research tool explained below.

#### **Marketing Research Tool**

With reference to FIG. 1, the second embodiment of a market research tool is also implemented in the client server environment over Internet 10. Computer 12 is used as a front end for a market research user who wishes to access the system of the present invention to view and download statistical research data which has been compiled and stored on servers 14 from the users' demographic data and trading history.

With reference to FIG. 17 the market research user accesses the market research tool by logging into the system, step 1702. Each market research user may establish an account, by either subscribing on-line or by telephone before using the system. The market research user is prompted for a user identification code and password for entry into the system.

Upon successful login into the system, the market research user is presented with a list of securities in the system database, step 1704. The market research user may, by use of a mouse or arrow keys, highlight securities for which the user wishes to view or download statistics, step 1706. In order to choose more than one security, the market research user may use a combination of the mouse, arrow keys and shift key. If the shift key is held down during selection, the prior selections made by the user are retained as highlighted selections in combination with the new selection. Selection criteria may also be selected to choose a certain class of securities, or securities which meet, for example, a minimal trading volume threshold over a specified period of time.

After selection of securities, the market research user is given options, on screen, for categories of information which may be obtained, step 1708. Exemplary categories which may be obtained regarding a security or group of securities include: trade volume information, buy vs. sell volume information, timing of volume information, total volume held information, investment concentration information, price information, stop limit order volume information, short sell volume information, and aggregate index information.

More specifically, in choosing to obtain trade volume for particular securities, the market research user may assess public awareness of the security. A very high trade volume over a period of time indicates a high degree of awareness for the security. Conversely, minimal volume indicates very little awareness. A query is performed on a trade history tracking table 2010 maintained by the virtual specialist program which contains a mirror image of all trades fulfilled by the virtual specialist program. A trade volume query answer table is created which contains, for each requested security, overall trade volume figures, yearly trade volume figures, monthly trade volume figures, and daily trade figures.

With regard to buy vs. sell volume information, if the volume for a security is predominantly buy-side volume, or volume generated by traders buying the security, it is generally due to a positive awareness. A predominantly sell-side volume for a security indicates that traders believe the security to be overvalued. When the market research user directs the system to obtain buy vs. sell volume information, the market research tool performs a query on the trade history tracking table 2010 and the price history tracking table 2020 described with respect to the virtual specialist program above. The query creates a temporary buy-sell volume answer table for all securities requested. The buy-sell volume answer table contains, for each security, overall buy volume figures, overall sell volume figures, yearly buy volume figures, yearly sell volume figures, monthly buy volume figures, monthly sell volume figures, daily buy volume figures, and daily sell volume figures.

With regard to timing of volume information, the trade volume for a security may be evaluated with respect to the entity and/or product underlying the security. For particular securities based on films or products, the trade volumes of the particular securities may be evaluated with respect to the stage of development that a film or product is in. A film that has just entered production, for example, hasn't been marketed by the studio to the public yet. High trading volume for the related movie stock may represent great public awareness for the movie or positive reaction by traders to the combination of actors who star in the movie. Similarly, in the movie star bond market, a non A-list actor that has high trade volume has a relatively high awareness.

In other embodiments, for securities based on products, market data may represent the beliefs of traders regarding various aspects of the products. Market data may reflect perceptions of traders regarding a particular product's performance, sales potential, safety, and/or any number and combination of characteristics. For example, a high trading volume for a derivative representing a car that is being marketed may reflect a strong belief by traders that the car will be popular with buyers. As another example, a high trading volume for a derivative representing a car that is undergoing safety testing may indicate a strong belief by traders that the car will obtain a high safety rating. As another example, a high trading volume for a derivative representing a new drug that is pending regulatory

approval may indicate a strong belief by traders that the new drug will quickly receive regulatory approval. By using market data to analyze a particular product may help a business entity to project how much of a product to manufacture, to formulate strategies for marketing campaigns, to determine how to improve product designs, and/or to make  
5 any number and combination of assessments related to a particular product.

In some embodiments, when the market research user directs the system to obtain timing volume information, the market research tool performs a query on the trade history tracking table 2010 and related development stage history table 2024, which keeps track of start and completion times of stages of development. The query creates a temporary timing  
10 volume answer table for all securities requested. The timing volume answer table contains, for each security, timing volume figures for each stage of production, stage of development, or stage of a project.

With regard to the total volume held for a security, if traders buy a particular security and generally hold on to it for a longer than average period of time, it  
15 demonstrates a high degree of faith in the long term performance of a security. For example, if traders tend to invest and hold an actor's star bond, it is probably because they think she has a long career ahead of her and will be popular for more than just one or two films. As another example, if traders tend to hold a derivative representing a particular car model, it may be because the traders believe that the particular car model will sell well for  
20 a long period of time. When the market research user directs the system to obtain total volume held information, the market research tool performs a query on the trade history tracking table 2010 which calculates the average number of shares held for each trader for the requested securities for each trader. The query creates a temporary total volume held answer table for all securities requested. The total volume held answer table contains, for  
25 each security, the time that each trader held each security they purchased, along with the volume held.

With regard to investment concentration, when there is heavy investment volume per shareholder in a particular security, it may demonstrate a high degree of faith in or loyalty to the entity underlying the particular security. For example, if 50,000 traders each  
30 hold an average of 100 shares corresponding to a particular car model, and 10,000 traders

hold an average of 500 shares for a second car model, the first car model would tend to have more widespread appeal than the second car model, but the second car model would tend to have a more loyal following. An analogous principle may be applied to derivatives based on films or actors. For example, if 50,000 traders each hold an average of 100 star bonds for a first actor, and 10,000 traders hold an average of 500 star bonds for a second actor, the first actor would tend to have more widespread appeal than the second actor, but the second actor would tend to have a more loyal following. In financial markets, this is known as concentration. In down markets, holders of these securities are unwilling to sell; in up markets they are willing to add to their positions. When the market research user directs the system to obtain investment concentration information, the market research tool performs a query on the trade history tracking table 2010 to retrieve figures for the average volume per share for all requested securities held at any time by all traders. The query creates a temporary investment concentration answer table for all securities requested. The total investment concentration answer table contains, for each security, the average volume that each trader held for each requested security.

With regard to price information, security prices are tied to perceived performance of the product, person, or entity underlying the security. For example, stock prices associated with movies may be tied to perceived box office performance. If a movie stock is priced at \$30, and a trader thinks that the movie will gross more than \$30 million at the box office, the trader will most probably buy the movie stock. Thus, the system of the present invention has the ability to find out what entities, films, actors, phonorecordings, or products consumers perceive will be successful. When the market research user directs the system to obtain price information, the market research tool performs a query on the price history tracking table 2020, described with respect to the virtual specialist program above, to retrieve price per share for all requested securities held by traders. The query creates a temporary price answer table for all securities requested. The price answer table contains, for each security, the price for each requested security.

With regard to stop limit order information, the system of the present invention tracks traders who set the price a security must obtain before a trade order is filled. Stop limit orders are not filled in the event that the market doesn't hit the specified price before

the time that the order expires. This functionality gauges traders' sensitivity to a price. For example, if a trader will only buy a movie stock below \$30, that may indicate that the trader only perceives a limited upside for the security, and thus believes that the movie will not be an industry blockbuster. As another example, if a trader will only buy a stock associated with a particular new drug if the stock price is below \$30, that may indicate that the trader perceives a small chance for that new drug to receive FDA approval or to be widely accepted by doctors. When the market research user directs the system to obtain stop limit order information, the market research tool performs a query on the trade history tracking table 2010 to retrieve price per share and volume figures for all requested securities held at any time by all traders which were stop limit orders, whether the limit for such orders were met or not. The query creates a stop limit order answer table for all securities requested. The stop limit order answer table contains, for each security, price per share and volume figures for every stop limit order requested by traders for the requested securities.

With respect to short sell information, if a trader thinks that the value of a security is going to decline, the trader can short sell the security. Analysis of short sell volume on a security can gauge if there is negative sentiment towards the security. When the market research user directs the system to short sell information, the market research tool performs a query on the trade history tracking table 2010 to retrieve short sell volume figures. The query creates a short sell answer table for all securities requested. The short sell answer table contains, for each security requested, the short sale trades orders by all traders.

With regard to index performance information, by aggregating market information into indices, insights can be drawn about the market as a whole. For example, a movie studio security index can be generated by calculating the sum of a studio's ten highest priced movie stocks over time. The performance of such an index may measure the potential strength of a studio's distribution or the box office potential of a studio's upcoming films. As another example, an index may be created to represent a particular car manufacturer. The particular index may be generated by calculating the sum of the manufacturer's ten highest priced stocks over time. The performance of such an index may measure the potential strength of a manufacturer. When the market research user

directs the system to obtain index performance information, the market research tool performs a query on the price history tracking table 2020 to retrieve price change figures for the securities in all requested indices. The query creates a temporary index performance answer table for all securities requested. The index performance answer table contains, for  
5 each requested index, price change over time figures.

In step 1708 (FIG. 17), the market research user may choose any number of the above categories of information for display or download for the securities selected in step 1706 by an on-screen selection or check list.

After the categories of information have been chosen, the market research user may  
10 then select an on-screen Ok button to execute the research. The system then compiles and executes a selection of SQL query calls according to all selections made by the user, step 1710. The query results are compiled and prepared for display, step 1712.

Once the results are compiled, pre-programmed graph, trend line and textual templates are used to display the query results on the GUI client display for all chosen  
15 securities and information categories described above, step 1714.

After display, the user is given the option, by selection button, to download the displayed results and underlying 60 query data, step 1716. If selected, the market research user is allowed to select from a variety of download formats, such as ASCII, xbase, dbf, HTML, tif, gif, bmp, or the like, step 1718. The market research user is allowed to choose  
20 a download location on the local client, step 1720. The system then proceeds to compile the data into the chosen format, step, 1722. The data is then transferred, using any one of a variety of protocols such as zmodem, xmodem, ftp, or any one of the OS industry standard protocols, step 1724. In the Web client-server environment, a TCP/IP socket is used.

After transfer, the market research user is prompted for whether another query is  
25 desired, step 1726. If another query is desired, execution is passed back to step 1704 for another research iteration. Otherwise, time and/or transaction charges, which are tracked from login time at step 1702, are compile and displayed on client 12, step 1728. The charges are simultaneously stored in a billing database for the next billing cycle, step 1730. The user is then logged out of the system, step 1732.

Although the present invention has been described in detail, it should be understood the various changes, substitutions, and alterations can be made hereto without departing from the scope of the invention as defined by the appended claims.



WHAT IS CLAIMED IS:

## 1. An apparatus, comprising:

at least one processor of an electronic trading system, the at least one processor operable to:

- 5           initiate execution of an internal timer for a sweep pricing cycle;
- determine data representing an initial price of a financial instrument, wherein the processor is operable to determine the initial price based at least in part on a characteristic of a pharmaceutical, the financial instrument representing the pharmaceutical;
- receive, from a graphical user interface of a computer of a first trader of a group of
- 10       traders, data representing a first order to buy the financial instrument;
- store the first order as a data structure in a first queue of a first data table in a memory;
- maintain the first order in the first queue until expiration of an internal timer of the sweep pricing cycle;
- 15       receive, from a graphical user interface of a computer of a second trader of the group of traders, data representing a second order to sell the financial instrument;
- store the second order as a data structure in a second queue of a data table in the memory;
- maintain the second order in the second queue until expiration of the internal timer
- 20       of the sweep pricing cycle;
- detect whether expiration of the sweep pricing cycle occurred;
- in response to detection of the expiration of the sweep pricing cycle, release the first order from the first queue and the second order from the second queue and determine data representing a price of the financial instrument based at least in part on the first order and
- 25       the second order during the sweep pricing cycle;
- execute an electronic trade of the financial instrument at the price;
- determine data representing an adjusted price based at least in part on a result associated with at least one of a stage of development of the pharmaceutical, a regulatory approval process of the pharmaceutical, and performance testing of the pharmaceutical; and

generate market data associated with the pharmaceutical, the market data being based at least in part on at least one of the trade, the first order, and the second order.

2. The apparatus of claim 1, wherein the processor is further operable to:  
5       define the group of traders, the group of traders being eligible to participate in trading the financial instrument.
3. The apparatus of claim 2, wherein defining the group of traders comprises:  
10       defining the group of traders based at least in part on at least one of employment status with a particular company, distributor status with respect to the pharmaceutical, and supplier status with respect to a component of the pharmaceutical.
4. The apparatus of claim 1, wherein the result comprises the pharmaceutical receiving an approval from the regulatory approval process.  
15
5. The apparatus of claim 1, wherein the result comprises a configurable number of units of the pharmaceutical being sold.
6. The apparatus of claim 1, wherein the processor is further operable to:  
20       determine an updated adjusted price based at least in part on a stage of sales of the pharmaceutical.
7. The apparatus of claim 1, wherein the processor is further operable to:  
25       compare a portfolio of financial instruments associated with the first trader against a portfolio of financial instruments associated with the second trader; and  
      determine a winning trader from among the group of traders, the determination based at least in part on the comparison.
8. The apparatus of claim 1, wherein:  
30       the first trader is associated with a first account of electronic currency; and

the second trader is associated with a second account of electronic currency;  
and the processor is further operable to:

debit the first account according to the trade; and  
credit the second account with proceeds of the trade.

5

9. A method, comprising:

initiating execution of an internal timer for a sweep pricing cycle;

determining, by at least one processor of at least one computing device of an  
electronic trading system, data representing an initial price of a financial instrument,  
10 wherein the initial price is determined based at least in part on a characteristic of a  
pharmaceutical, the financial instrument representing the pharmaceutical;

receiving, by the at least one processor, from a graphical user interface of a computer  
of a first trader of a group of traders, data representing a first order to buy the financial  
instrument;

15 storing the first order as a data structure in a first queue of a first data table in a  
memory; maintaining the first order in the first queue until expiration of an internal timer  
of the sweep pricing cycle;

receiving, by the at least one processor, from a graphical user interface of a computer  
of a second trader of the group of traders, data representing a second order to sell the  
20 financial instrument;

storing the second order as a data structure in a second queue of a data table in the  
memory;

maintaining the second order in the second queue until expiration of the internal  
timer of the sweep pricing cycle;

25 detecting whether expiration of the sweep pricing cycle occurred;

in response to detection of the expiration of the sweep pricing cycle, releasing the  
first order from the first queue and the second order from the second queue and determining,  
by the at least one processor, data representing a price based at least in part on the first order  
and the second order during the sweep pricing cycle;

30 executing, by the at least one processor, an electronic trade at the price;

determining, by the at least one processor, data representing an adjusted price based at least in part on a result associated with at least one of a stage of development of the pharmaceutical, a regulatory approval process of the pharmaceutical, and performance testing of the pharmaceutical; and

5           generating, by the at least one processor, market data associated with the pharmaceutical, the market data being based at least in part on at least one of the trade, the first order, and the second order.

10. The method of claim 9, wherein the characteristic of the pharmaceutical comprises at least one of a test result for the pharmaceutical, a cost of the pharmaceutical, an ingredient of the pharmaceutical, and the stage of development of the pharmaceutical.

11. The method of claim 9, further comprising:

15           defining, by the at least one processor, the group of traders, the group of traders being eligible to participate in trading the financial instrument.

12. The method of claim 9, wherein defining the group of traders comprises:

20           defining the group of traders based at least in part on at least one of employment status with a particular company, distributor status with respect to the pharmaceutical, and supplier status with respect to a component of the pharmaceutical.

13. The method of claim 9, wherein the result comprises the pharmaceutical receiving an approval from the regulatory approval process.

25   14. The method of claim 9, wherein the result comprises a configurable number of units of the pharmaceutical being sold.

15. The method of claim 9, further comprising:

30           determining, by the at least one processor, an updated adjusted price based at least in part on a stage of sales of the pharmaceutical.

16. The method of claim 9, further comprising:

5 comparing, by the at least one processor, a portfolio of financial instruments associated with the first trader against a portfolio of financial instruments associated with the second trader; and

determining, by the at least one processor, a winning trader from among the group of traders, the determination based at least in part on the comparison

17. The method of claim 9, wherein:

10 the first trader is associated with a first account of electronic currency; and  
the second trader is associated with a second account of electronic currency; and  
wherein the method further comprises:

debiting, by the at least one processor, the first account according to the trade;  
and

15 crediting, by the at least one processor, the second account with proceeds of the trade.

18. A computer-readable medium storing instructions, the computer-readable medium being a tangible medium, the instructions being executable by at least one processor

20 to:

initiate execution of an internal timer for a sweep pricing cycle;

25 determine data representing an initial price of a financial instrument, wherein the instructions are executable by the at least one processor to determine the initial price based at least in part on a characteristic of a pharmaceutical, the financial instrument representing the pharmaceutical;

receive, from a graphical user interface of a computer of a first trader of a group of traders, data representing a first order to buy the financial instrument;

30 store the first order as a data structure in a first queue of a first data table in a memory;  
maintain the first order in the first queue until expiration of an internal timer of the sweep pricing cycle;

receive, from a graphical user interface of a computer of a second trader of the group of traders, data representing a second order to sell the financial instrument;

store the second order as a data structure in a second queue of a data table in the memory; maintain the second order in the second queue until expiration of the internal timer  
5 of the sweep pricing cycle;

detect whether expiration of the sweep pricing cycle occurred;

in response to detection of the expiration of the sweep pricing cycle, release the first order from the first queue and the second order from the second queue and determine a price of the financial instrument based at least in part on the first order and the second  
10 order;

execute an electronic trade of the financial instrument at the price via an electronic trading system;

receive information about a result associated with at least one of a stage of development of the pharmaceutical, a regulatory approval process of the pharmaceutical, and performance testing of the pharmaceutical;  
15

determine, data representing an adjusted price based at least in part on the received information about the result;

responsive to the act of determining the adjusted price, output to the graphical user interfaces of the respective computers of the first and second traders data  
20 representing the adjusted price; and

generate market data associated with the pharmaceutical, the market data being based at least in part on at least one of the trade, the first order, and the second order.

19. The computer-readable medium of claim 18, wherein the characteristic of the  
25 pharmaceutical comprises at least one of a test result for the pharmaceutical, a cost of the pharmaceutical, an ingredient of the pharmaceutical, and the stage of development of the pharmaceutical.

20. The computer-readable medium of claim 18, wherein the instructions are further  
30 executable by the at least one processor to:

define the group of traders, the group of traders being eligible to participate in trading the financial instrument.

21. The computer-readable medium of claim 20, wherein defining the group of  
5 traders comprises:

define the group of traders based at least in part on at least one of employment status with a particular company, distributor status with respect to the pharmaceutical, and supplier status with respect to a component of the pharmaceutical.

10 22. The computer-readable medium of claim 18, wherein the result comprises the pharmaceutical receiving an approval from the regulatory approval process.

23. The computer-readable medium of claim 18, wherein the result comprises a configurable number of units of the pharmaceutical being sold.

15

24. The computer-readable medium of claim 18, wherein the instructions are further executable by the at least one processor to:

determine an updated adjusted price based at least in part on a stage of sales of the pharmaceutical.

20

25. The computer-readable medium of claim 18, wherein the instructions are further executable by the at least one processor to:

compare a portfolio of financial instruments associated with the first trader against a portfolio of financial instruments associated with the second trader; and

25 determine a winning trader from among the group of traders, the determination based at least in part on the comparison.

26. The computer-readable medium of claim 18, wherein:

the first trader is associated with a first account of electronic currency; and

the second trader is associated with a second account of electronic currency;  
and the instructions are further executable by the at least one processor to:

debit the first account according to the trade; and  
credit the second account with proceeds of the trade.

5

27. The apparatus of claim 1, wherein the at least one processor is further operable to:  
determine a number of shares to issue for the financial instrument.

28. The apparatus of claim 1, wherein the result comprises a decision to not pursue  
development of the pharmaceutical.

10

29. The apparatus of claim 1, wherein the stage of development comprises at least one of a  
design stage, a safety testing stage, and a marketing stage.

30. The apparatus of claim 8, wherein the electronic currency is backed by at least one of  
real currency and artificial currency.

15

31. The apparatus of claim 1, wherein executing the trade comprises:  
executing a trade of the financial instrument at the price using at least one of real  
currency and artificial currency.

20

32. The apparatus of claim 1, wherein generating the market data comprises:  
generating the market data associated with the pharmaceutical, the market data  
being based at least in part on the adjusted price and at least one of the trade, the first order,  
and the second order.

25

33. The apparatus of claim 1, wherein the at least one processor is further operable to:  
determine a redemption value associated with the financial instrument; and  
adjust the redemption value based at least in part on the result.

30



34. The apparatus of claim 33, wherein the redemption value represents a maximum value for which a trading exchange will redeem a share of the financial instrument.

35. The apparatus of claim 33, wherein the redemption value represents a minimum value  
5 for which a trading exchange will redeem a share of the financial instrument.

36. The apparatus of claim 1, wherein the at least one processor is further operable to:  
regulate a contents of a portfolio of financial instruments associated with the first  
trader such that the portfolio does not comprise more than a percentage of outstanding  
10 shares of the financial instrument.

37. The apparatus of claim 1, wherein the at least one processor is further operable to:  
regulate a contents of a portfolio of financial instruments associated with the first  
trader such that a number of shares of the financial instrument in the portfolio does not  
15 exceed a percentage of all of the shares of financial instruments in the portfolio.

38. The apparatus of claim 1, wherein the at least one processor is further operable to:  
receive a passcode from the first trader; and  
verify, based at least in part on the passcode, that the first trader is eligible to  
20 participate in trading the financial instrument.

39. The apparatus of claim 38, wherein the first trader obtained the passcode via purchase of a particular product.

25 40. The apparatus of claim 39, wherein the particular product is associated with the pharmaceutical.

41. The apparatus of claim 1, wherein the financial instrument represents an index of the pharmaceutical and at least one other pharmaceutical.  
30

42. The apparatus of claim 1, wherein the pharmaceutical comprises a particular drug in a line of drugs from a pharmaceutical company.

43. The apparatus of claim 1, wherein the pharmaceutical comprises only one pharmaceutical, wherein the only one pharmaceutical represents a series of new drugs of a particular model in a line of drugs from a pharmaceutical company.

44. The apparatus of claim 1, wherein the at least one processor is further operable to:

10 determine a second initial price of a second financial instrument, wherein the at least one processor is further operable to determine the second initial price based at least in part on a second characteristic of a second pharmaceutical, the second financial instrument representing the second pharmaceutical;

determine a second price of the second financial instrument;

15 execute a second trade of the second financial instrument at the second price;

determine a second adjusted price based at least in part on a second result associated with the second pharmaceutical; and

20 generate second market data associated with the second pharmaceutical, the market data being based at least in part on at least one of the second trade and the second adjusted price.

45. The apparatus of claim 44, wherein the at least one processor is further operable to:

set the initial price of the financial instrument and the second initial price of the second financial instrument to be equal.

25

46. The apparatus of claim 1, wherein the financial instrument comprises a stock.

47. The apparatus of claim 1, wherein the financial instrument comprises a bond.

30 48. The apparatus of claim 6, wherein determining the updated adjusted price comprises:

determining that the pharmaceutical was not successful in the stage of sales; and reducing the adjusted price to zero.

49. The apparatus of claim 1, wherein determining the adjusted price comprises:

- 5       determining, based at least in part on the result, that the pharmaceutical was not successful in the stage of development; and  
      reducing the price to zero.

50. The apparatus of claim 1, wherein the characteristic of the pharmaceutical comprises a  
10 test result for the pharmaceutical.

51. The apparatus of claim 1, wherein the characteristic of the pharmaceutical comprises a cost of the pharmaceutical.

15 52. The apparatus of claim 1, wherein the characteristic of the pharmaceutical comprises an ingredient of the pharmaceutical.

53. The apparatus of claim 1, wherein the characteristic of the pharmaceutical comprises the stage of development of the pharmaceutical.

20

54. The apparatus of claim 1, wherein the act of determining an adjusted price comprises determining an adjusted price based at least in part on a result associated with a stage of development of the pharmaceutical.

25 55. The apparatus of claim 1, wherein the act of determining an adjusted price comprises determining an adjusted price based at least in part on a result associated with a regulatory approval process of the pharmaceutical.

56. The apparatus of claim 1, wherein the act of determining an adjusted price comprises determining an adjusted price based at least in part on a result associated with performance testing of the pharmaceutical.

5 57. The method of claim 9, wherein the act of determining an adjusted price based at least in part on a result comprises determining an adjusted price based at least in part on a result associated with a stage of development of the pharmaceutical.

10 58. The method of claim 9, wherein the act of determining an adjusted price based at least in part on a result comprises determining an adjusted price based at least in part on a result associated with a regulatory approval process of the pharmaceutical.

15 59. The method of claim 9, wherein the act of determining an adjusted price based at least in part on a result comprises determining an adjusted price based at least in part on a result associated with performance testing of the pharmaceutical.

60. The computer-readable medium of claim 18, wherein the act of determining an adjusted price based at least in part on a result comprises determining an adjusted price based at least in part on a result associated with performance testing of the pharmaceutical.

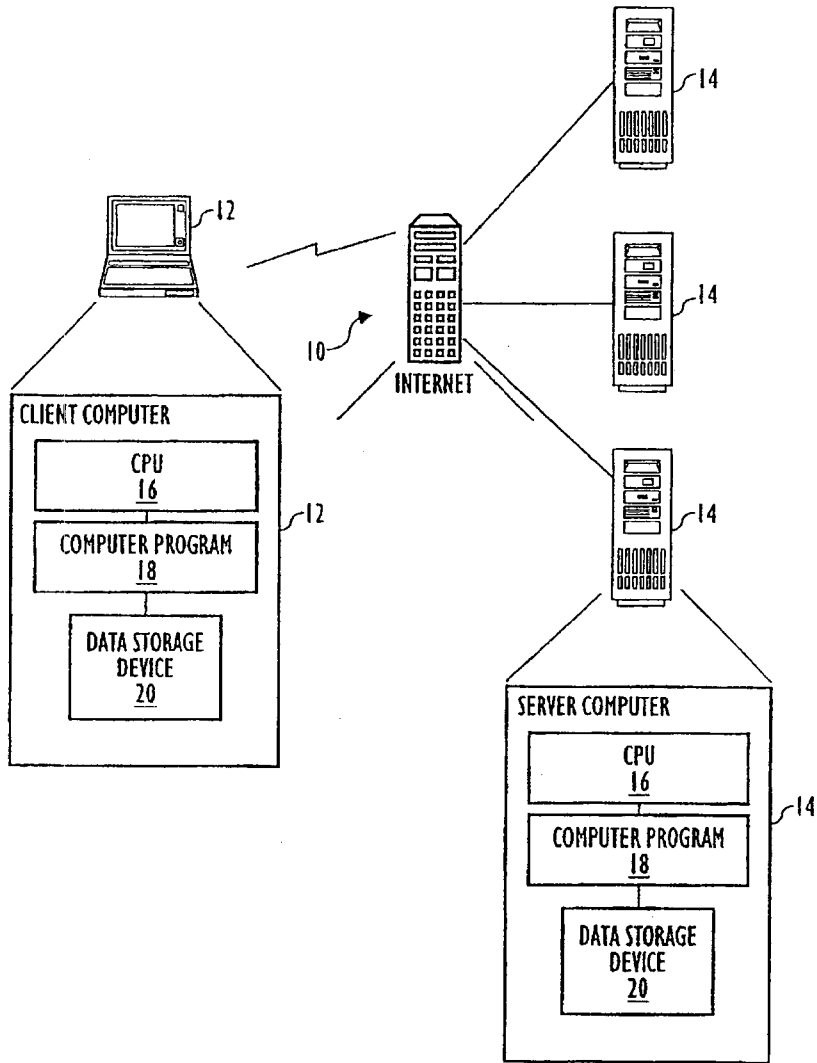


FIG. 1

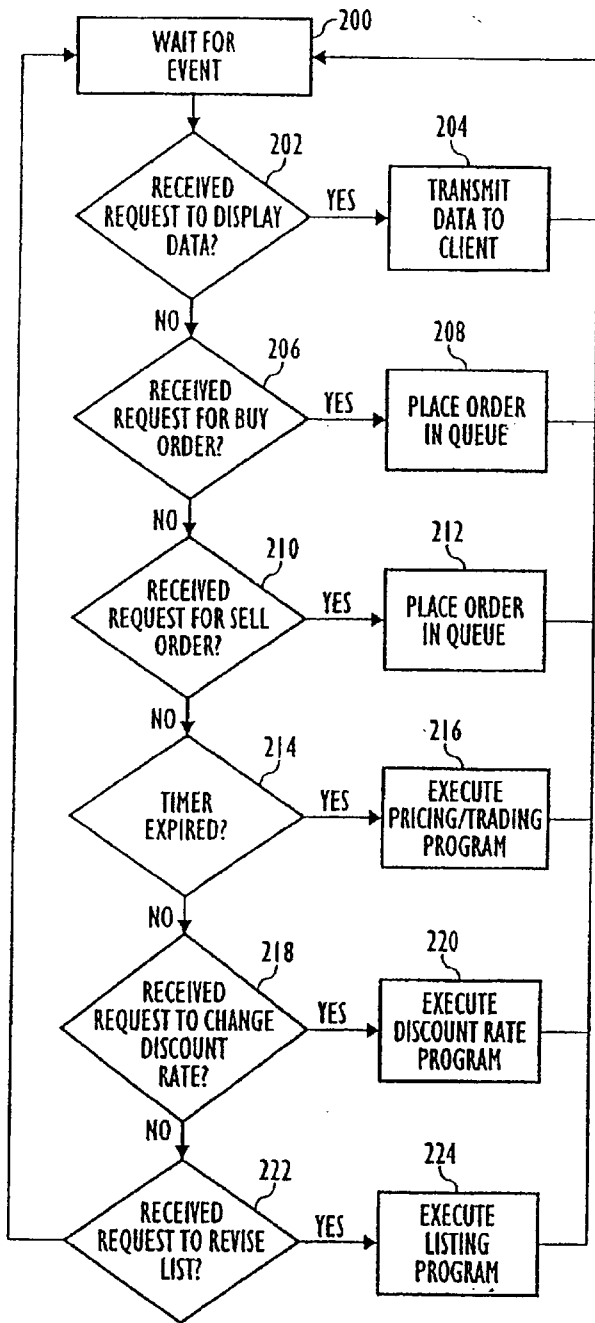


FIG. 2

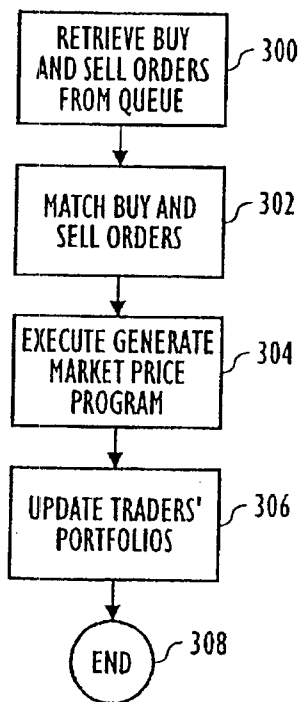


FIG. 3

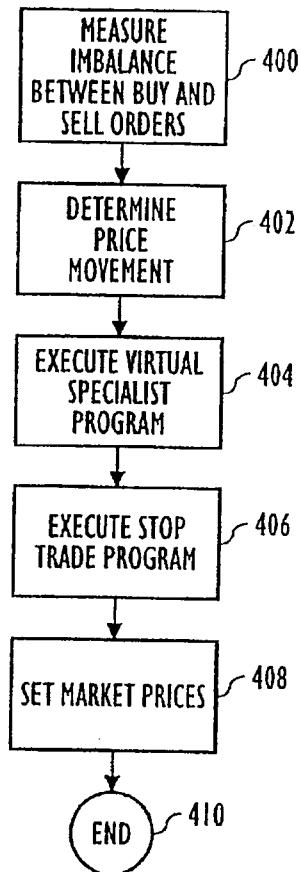


FIG. 4

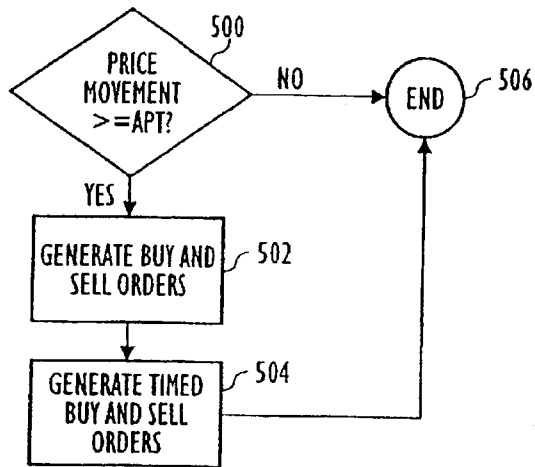


FIG. 5

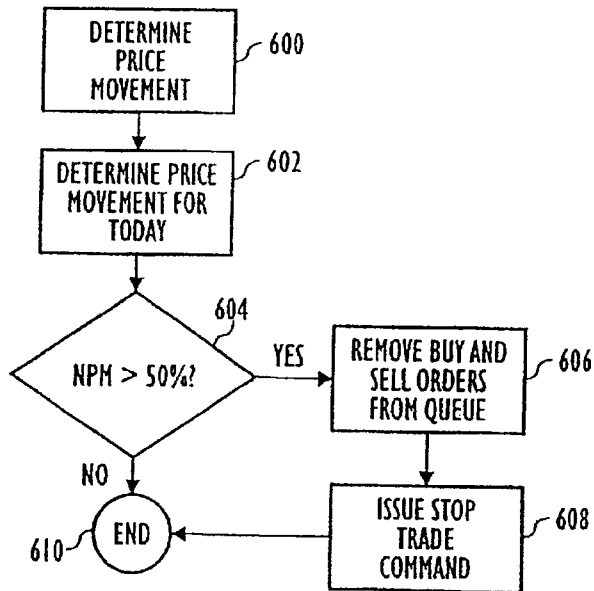


FIG. 6



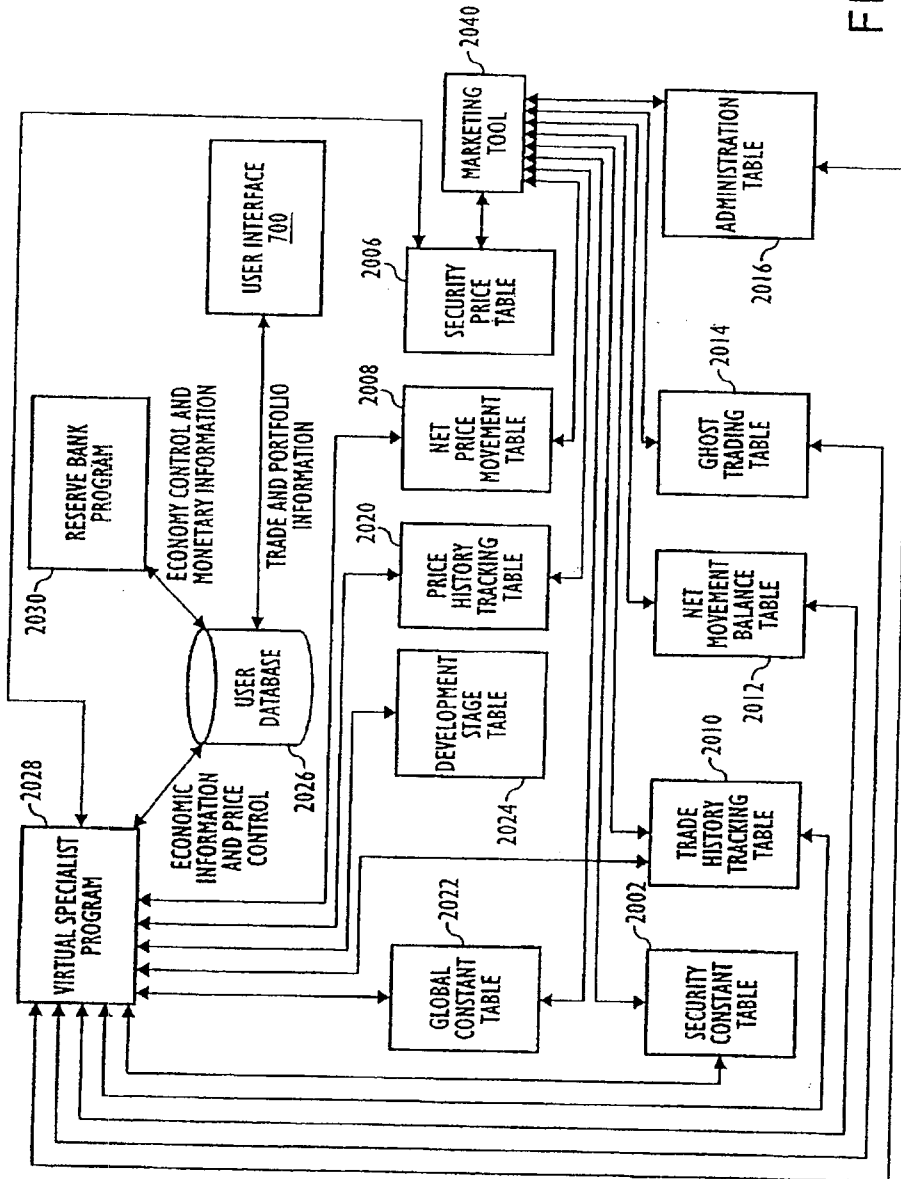
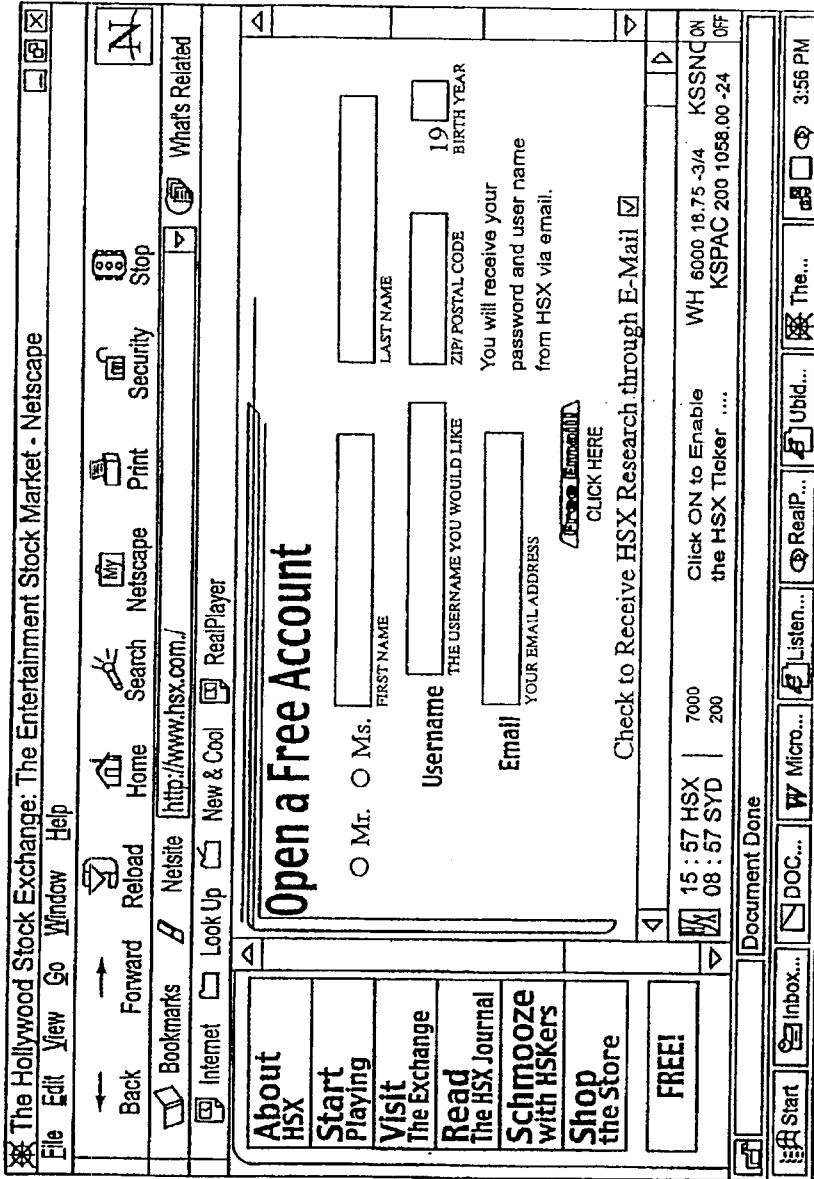


FIG. 7



700

FIG. 8A

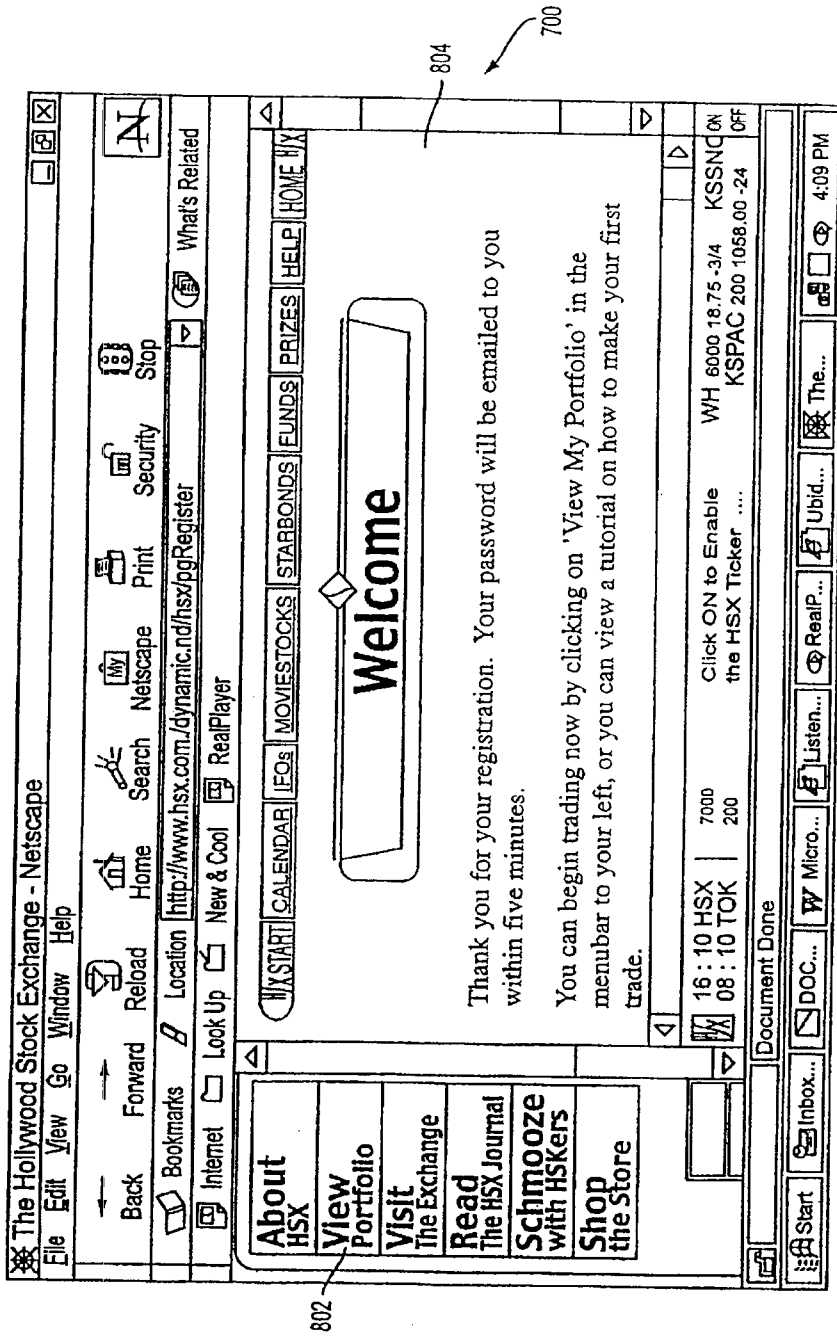


FIG. 8B

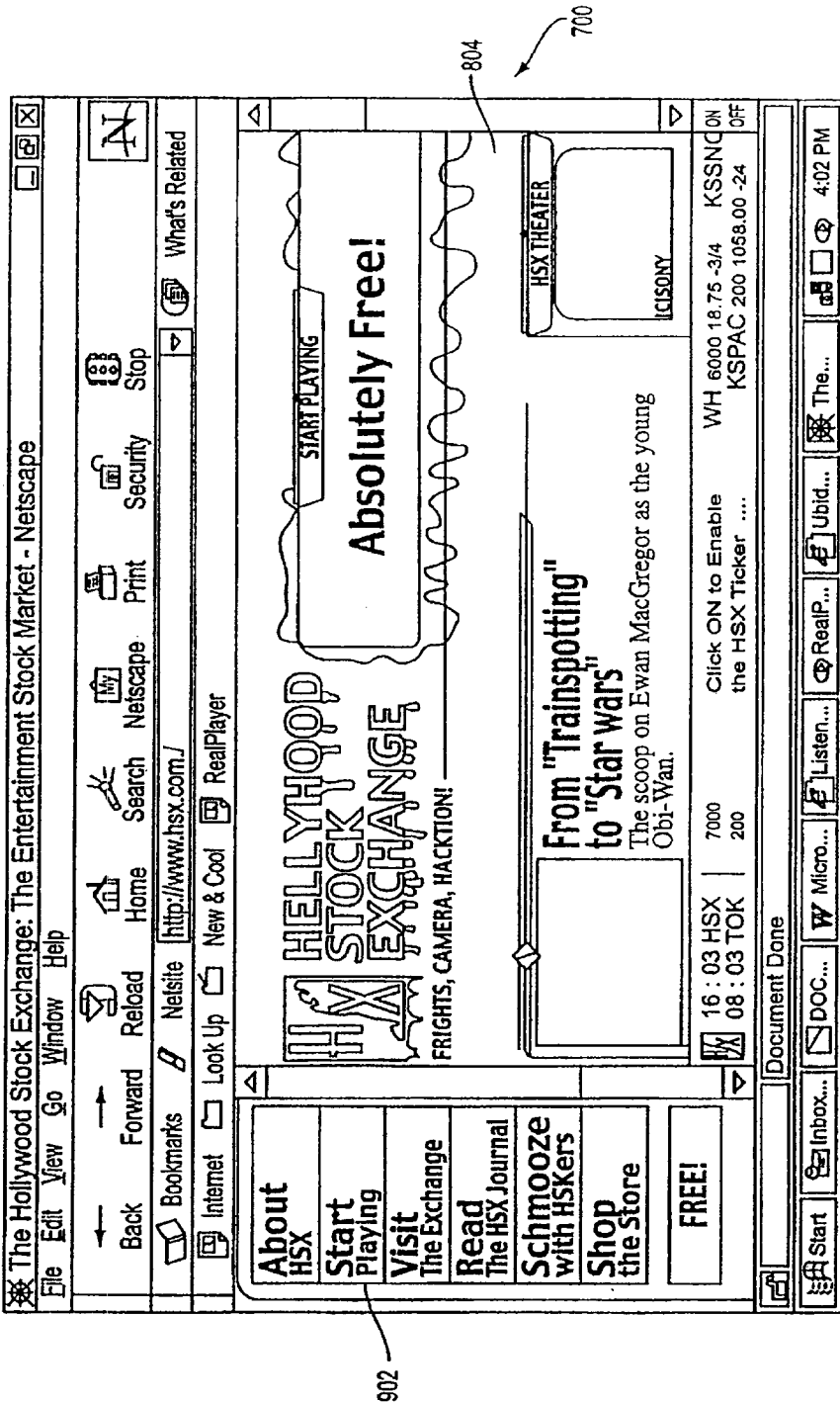


FIG. 9

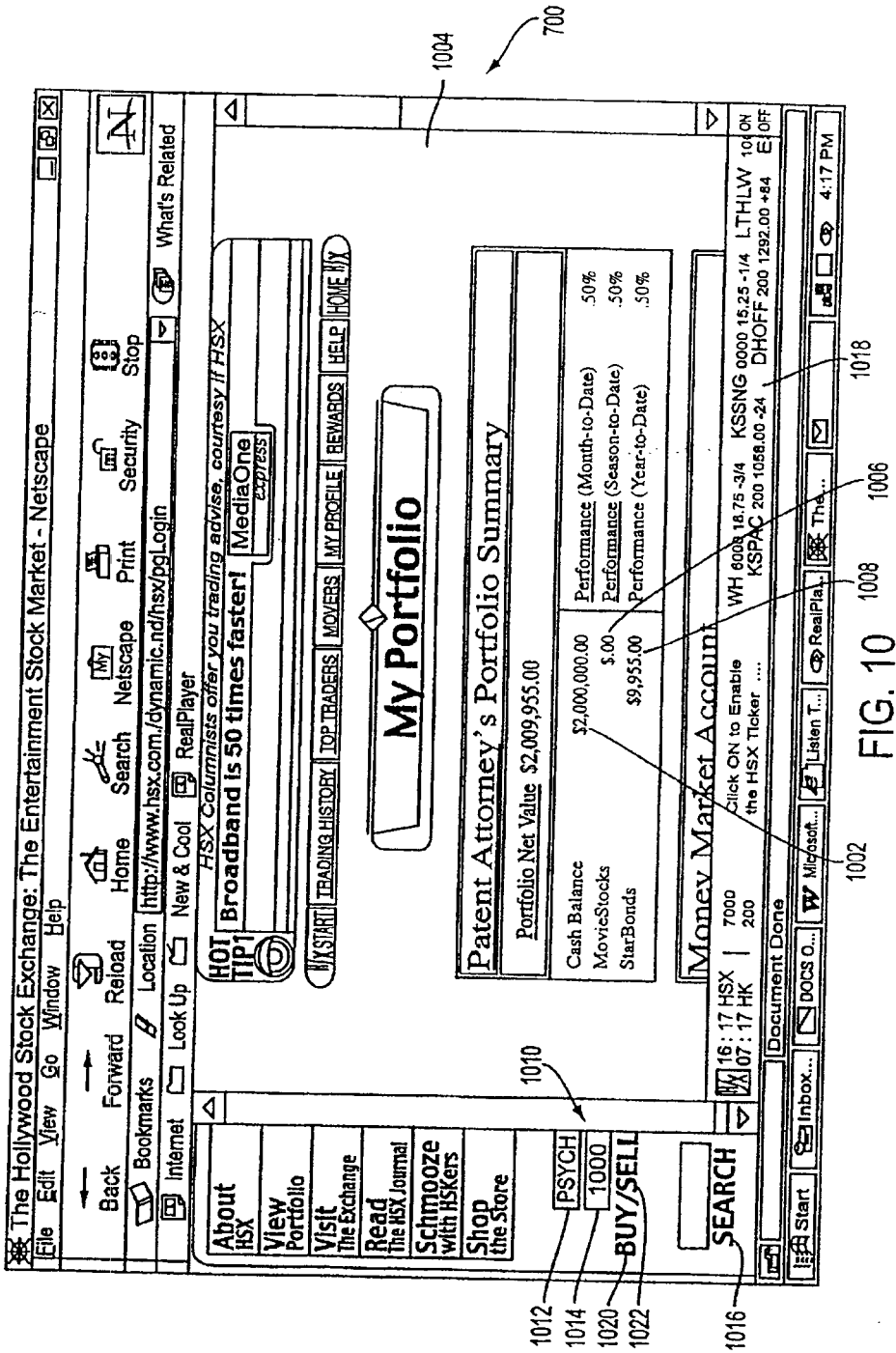


FIG. 10

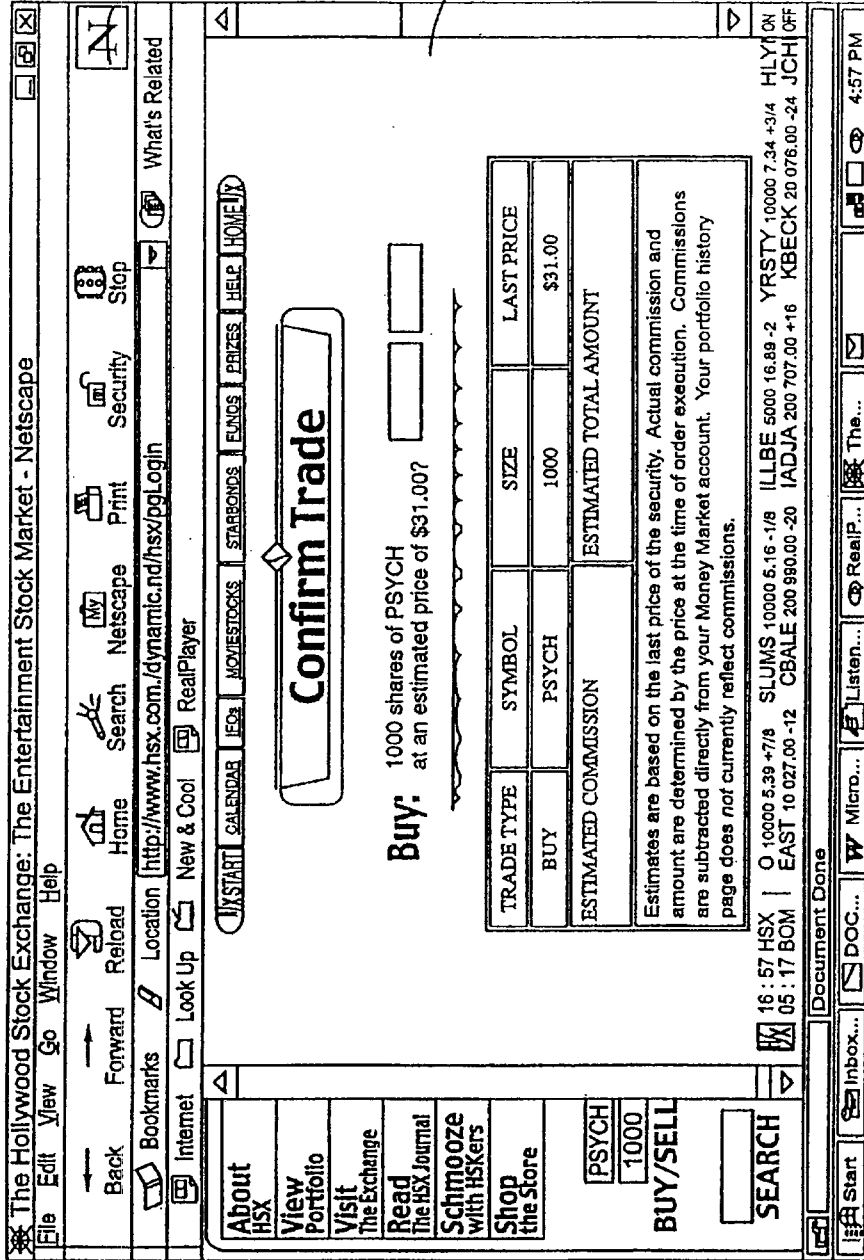
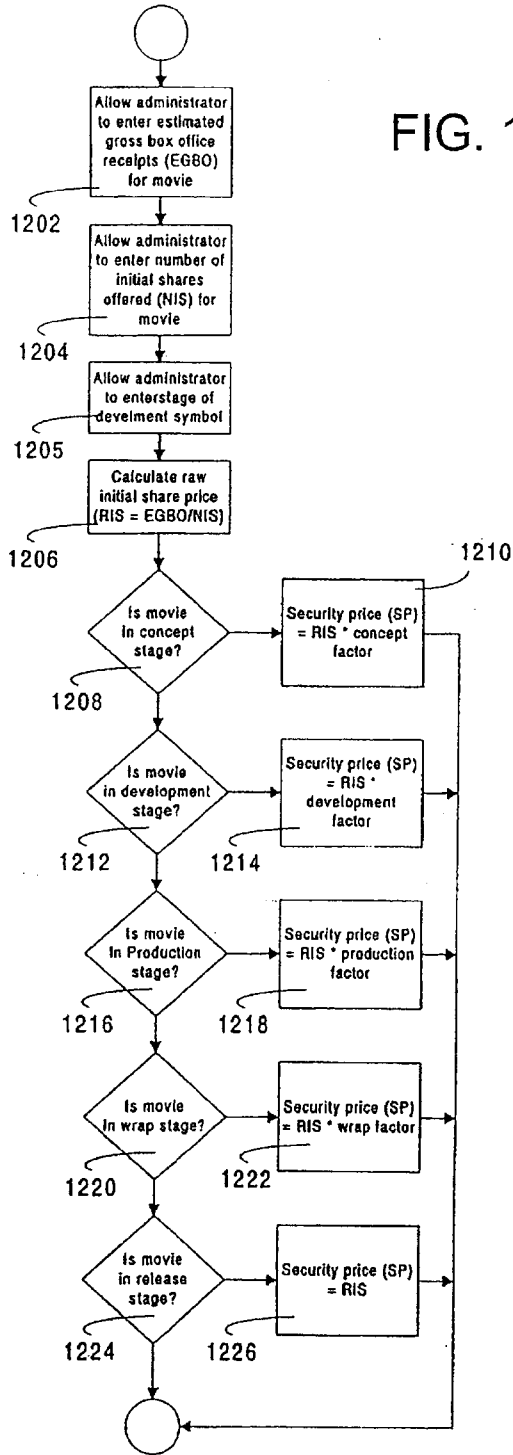
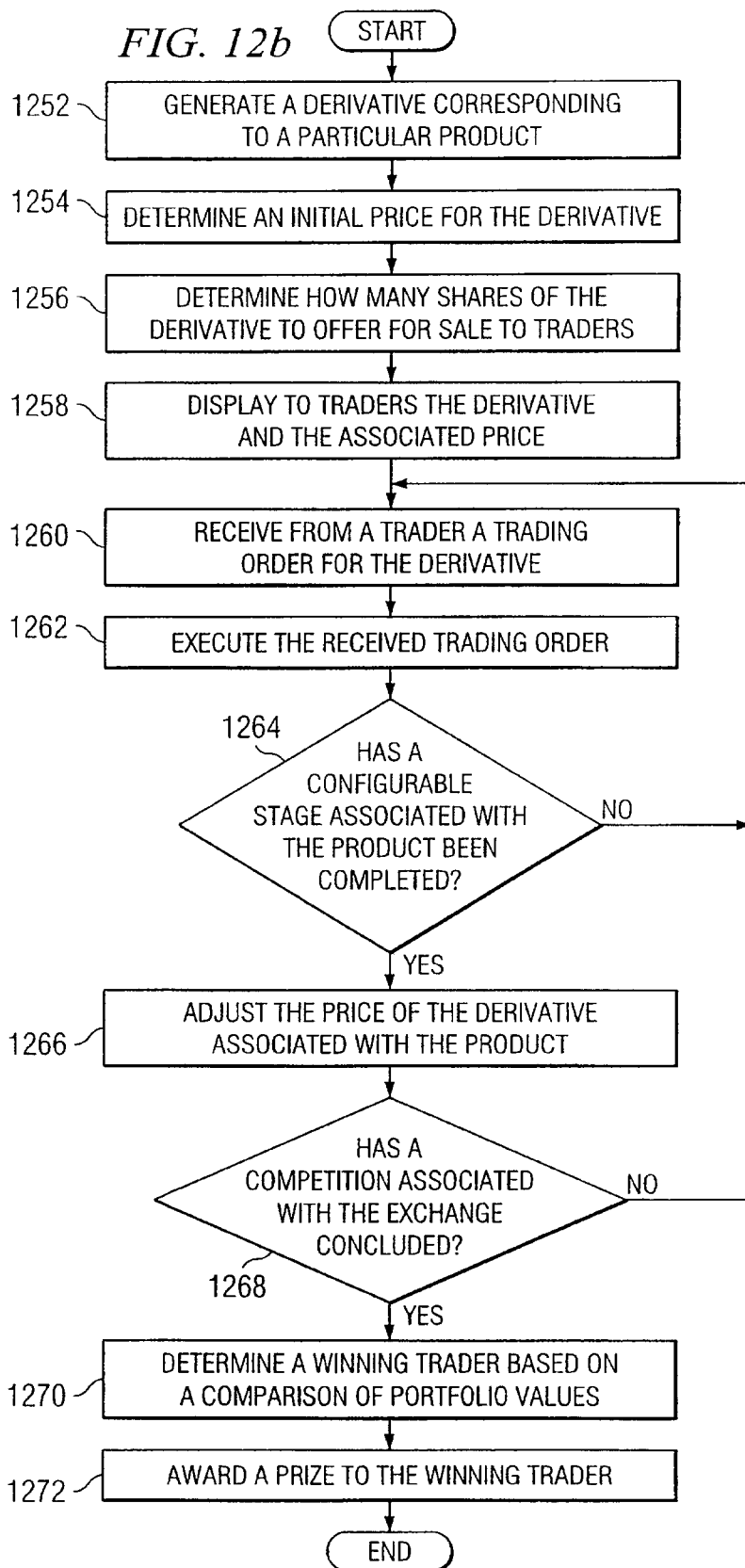


FIG. 11

FIG. 12a







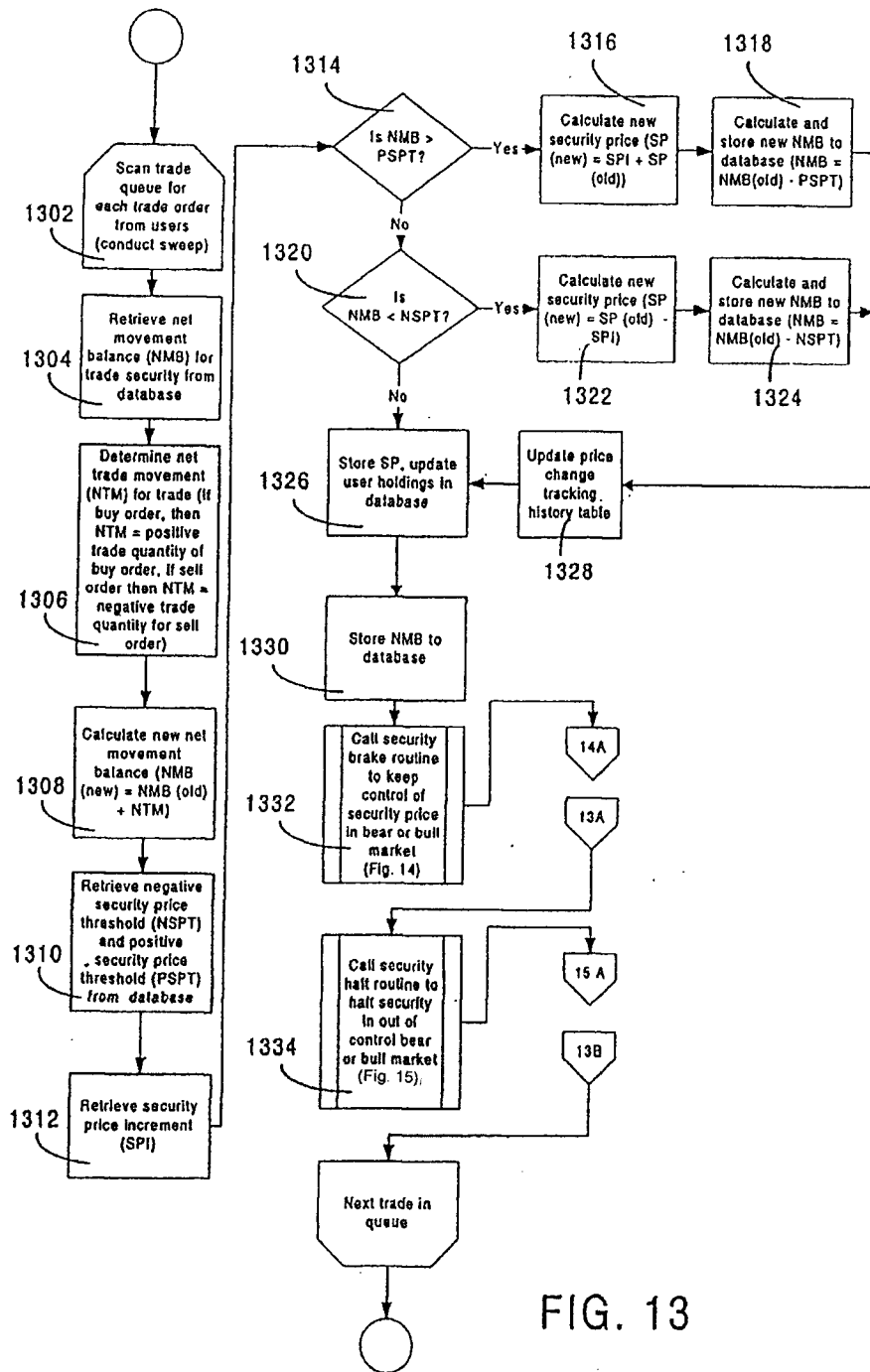


FIG. 13

FIG. 14

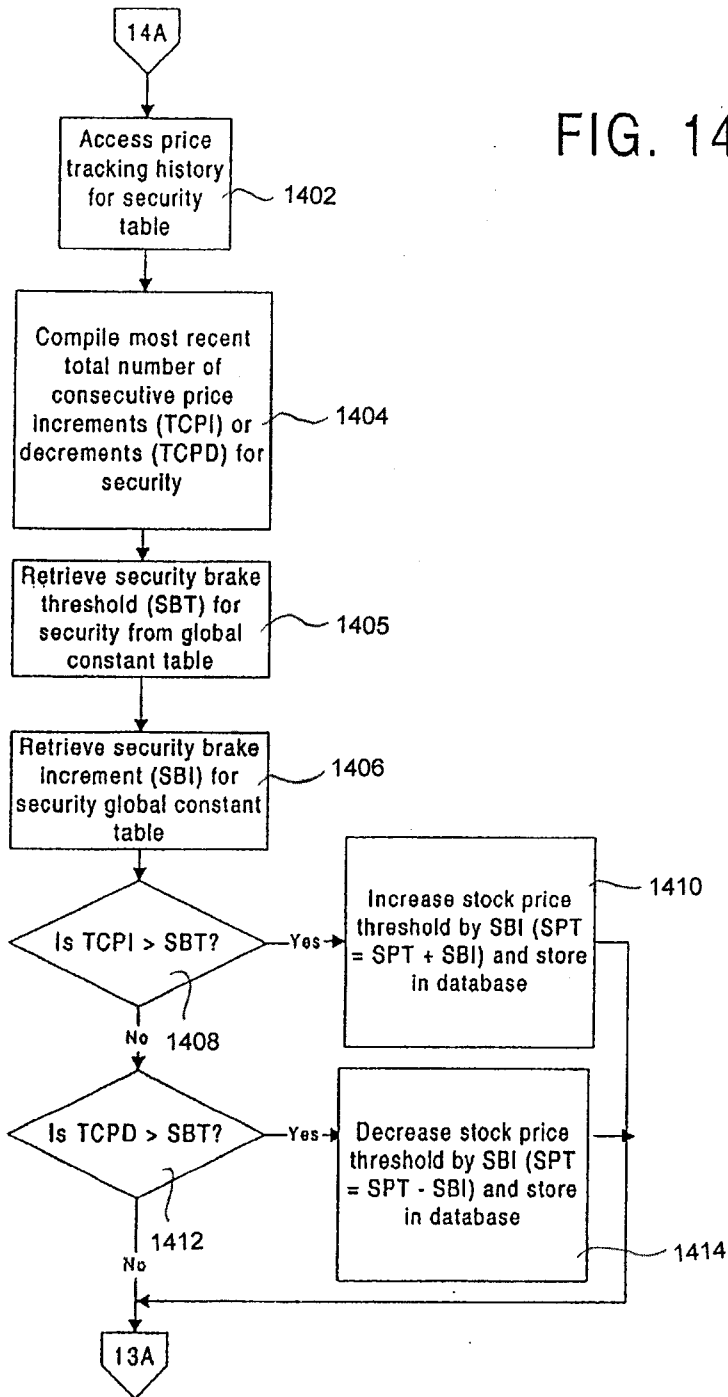


FIG. 15

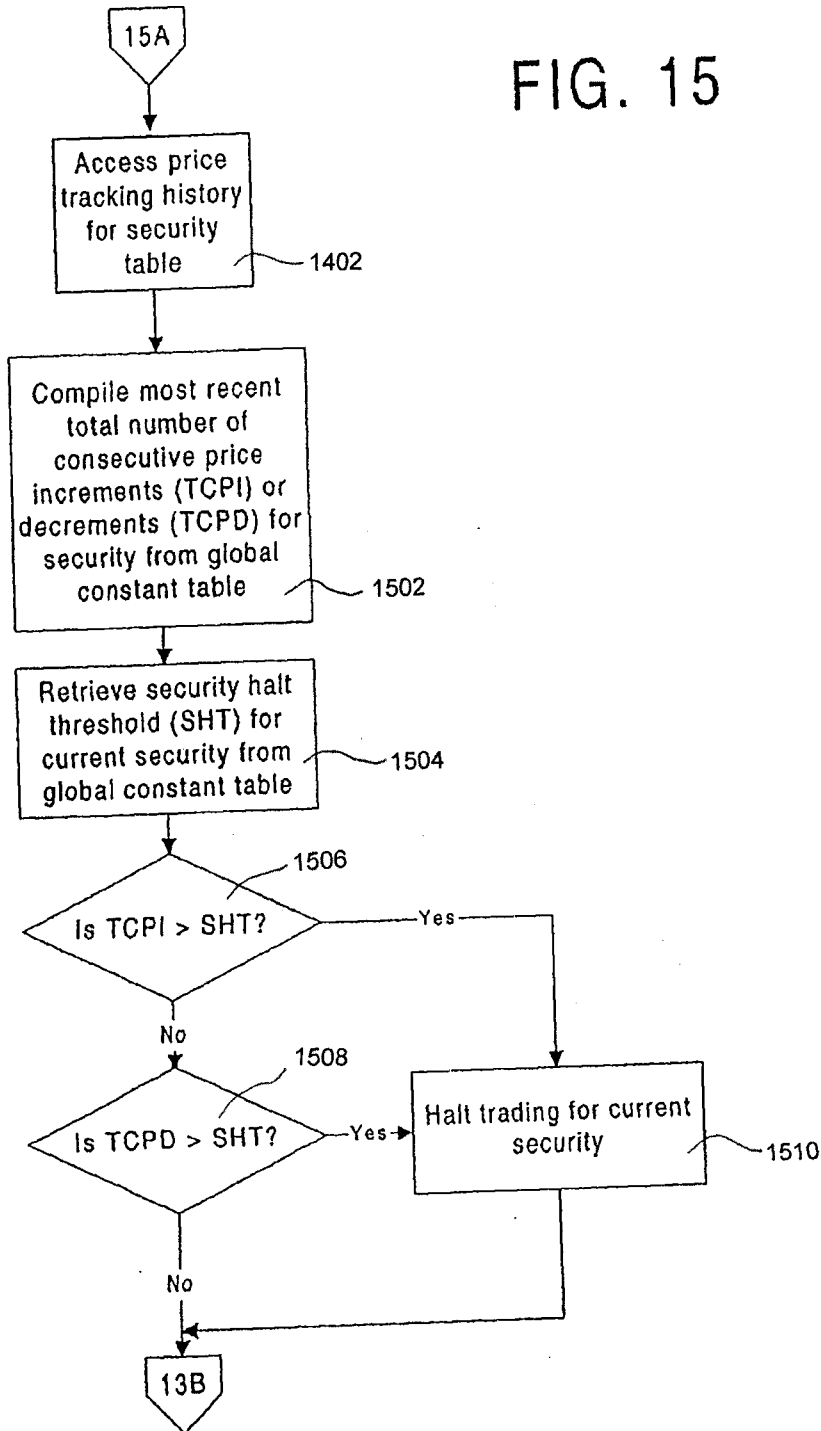


FIG. 16

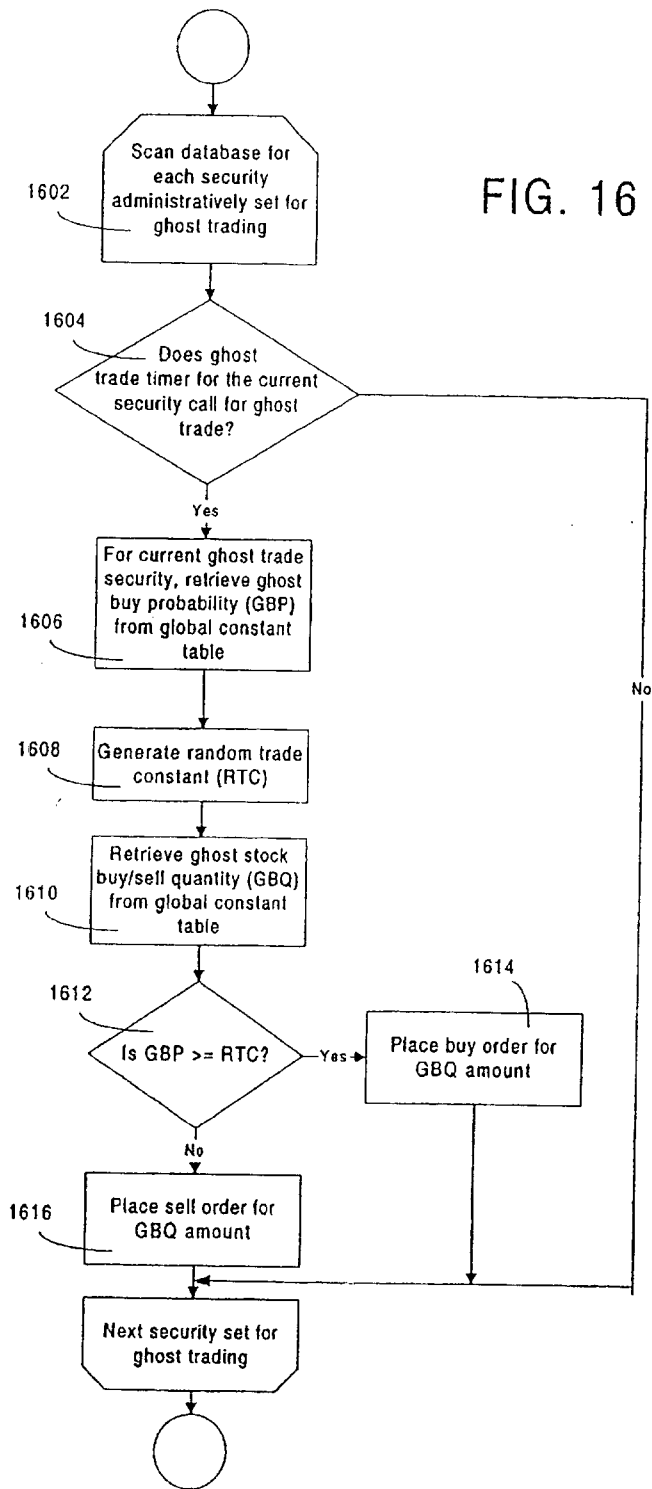
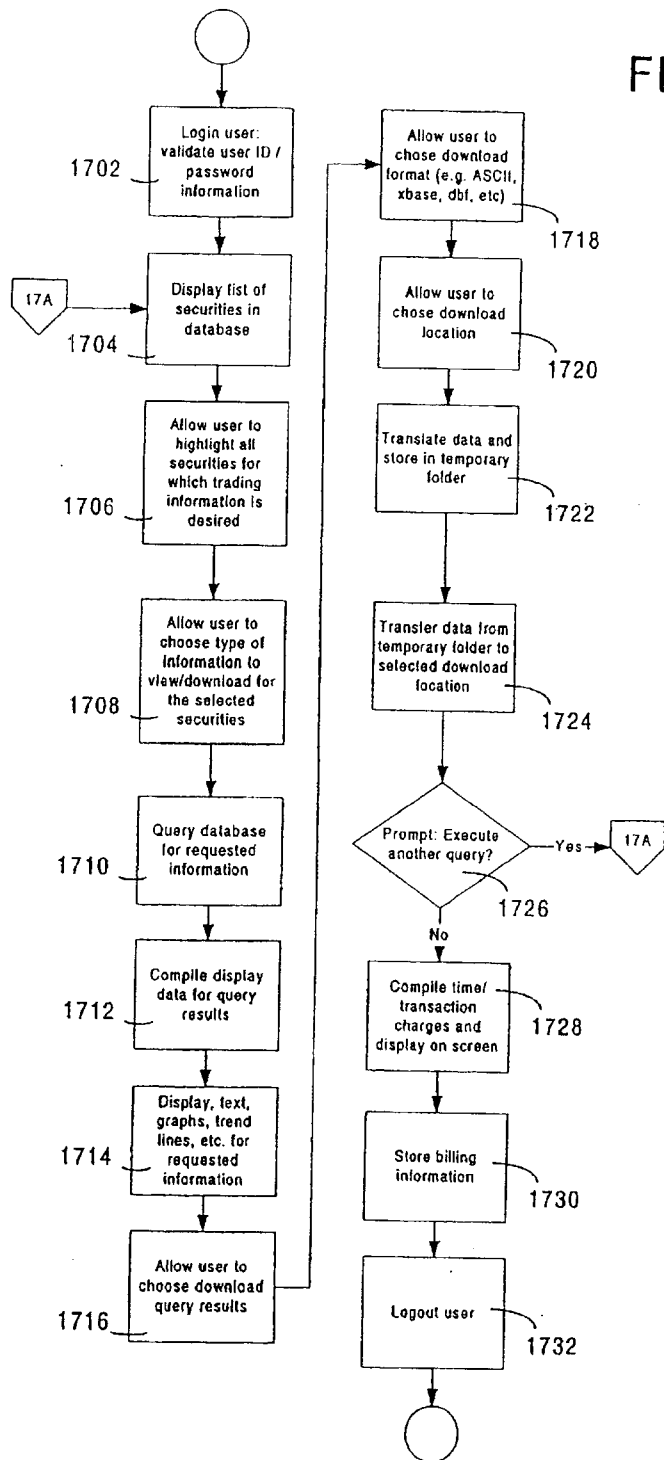


FIG. 17



## ADMINISTRATION MODULE

## GLOBAL EXCHANGE VARIABLES

\*\*\*VIRTUAL SPECIALIST VOLATILITY ADJUSTERS

StockPosPriceThresh:  
 StockNegPriceThresh:  
 BondPosPriceThresh:  
 BondNegPriceThresh:  
 StockPriceIncr:  
 BondPriceIncr:

StockBrakeThresh:  
 BondBrakeThresh:  
 StockBrakeIncr:  
 BondBrakeIncr:  
 StockTradeHaltThresh:  
 BondTradeHaltThresh:

\*\*\*GHOST TRADING PARAMETERS

GhostBuyProb:  
 GhostNumOrders:  
 GhostStockBuyQty:  
 GhostStockSellQty:  
 GhostBondBuyQty:  
 GhostBondSellQty:

GENERAL TRADING PARAMETERS (NOT SPECIFIC TO  
VIRTUAL SPECIALIST)

StockTradeMod:  
 BondTradeMod:  
 StockAmtOutstanding:  
 BondAmtOutstanding:  
 MaxSecOwnPercent:  
 StockTradeMin:  
 BondTradeMin:  
 StockTradeMax:  
 BondTradeMax:

SyndicateMaxStockThresh:  
 SyndicateMinStockThresh:  
 SyndicateMinBondThresh:  
 SyndicateMaxBondThresh:

ECONOMY WIDE PARAMETERS

DiscountRate:

MoneyMarketRate:  
 CommissionPercent:

GAME ENGINE CONTROL

OrderExecInter:  
 TradingDayInter:  
 CommissionExecInter:  
 SessionLengthInter:  
 InitialCashBalance:  
 NumStandingsDisplay:

700

FIG. 18

