

No. _____

IN THE

Supreme Court of the United States

TRADING TECHNOLOGIES INTERNATIONAL, INC.,

Petitioner,

v.

IBG, LLC, et al.,

Respondents.

**On Petition for a Writ of Certiorari to the
United States Court of Appeals
For the Federal Circuit**

PETITION APPENDIX

STEVEN F. BORSAND	ANDREW M. GROSSMAN
ADAM J. FAIER	<i>Counsel of Record</i>
TRADING TECHNOLOGIES	RENEE KNUDSEN
INTERNATIONAL	BAKER & HOSTETLER LLP
222 S. Riverside	1050 Connecticut Ave., N.W.
Plaza, Ste. 1100	Washington, D.C. 20036
Chicago, IL 60606	(202) 861-1697
	agrossman@bakerlaw.com

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NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

**TRADING TECHNOLOGIES INTERNATIONAL,
INC.,**
Appellant

v.

IBG, LLC, INTERACTIVE BROKERS, LLC,
Appellees

UNITED STATES,
Intervenor

2018-1105

Appeal from the United States Patent and
Trademark Office, Patent Trial and Appeal Board in
No. CBM2016-00009.

**TRADING TECHNOLOGIES INTERNATIONAL,
INC.,**
Appellant

v.

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IBG, LLC, INTERACTIVE BROKERS, LLC,
Appellees

UNITED STATES,
Intervenor

2018-1302

Appeal from the United States Patent and
Trademark Office, Patent Trial and Appeal Board in
No. CBM2016-00054.

**TRADING TECHNOLOGIES INTERNATIONAL,
INC.,**
Appellant

v.

IBG, LLC, INTERACTIVE BROKERS, LLC,
Appellees

UNITED STATES,
Intervenor

2018-1438

Appeal from the United States Patent and
Trademark Office, Patent Trial and Appeal Board in
No. CBM2016-00087.

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**TRADING TECHNOLOGIES INTERNATIONAL,
INC.,**
Appellant

v.

**UNITED STATES, ANDREI IANCU, UNDER
SECRETARY OF COMMERCE FOR
INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES
PATENT AND TRADEMARK OFFICE,**
Intervenors

2018-1443

Appeal from the United States Patent and
Trademark Office, Patent Trial and Appeal Board in
No. CBM2016-00086.

Decided: May 21, 2019

MICHAEL DAVID GANNON, Baker & Hostetler
LLP, Chicago, IL, argued for appellant. Also repre-
sented by LEIF R. SIGMOND, JR., JENNIFER
KURCZ; ALAINA J. LAKAWICZ, Philadelphia, PA;
STEVEN BORSAND, JAY QUENTIN KNOBLOCH,
Trading Technologies International, Inc., Chicago, IL.

BYRON LEROY PICKARD, Sterne Kessler Gold-
stein & Fox, PLLC, Washington, DC, argued for ap-
pellees in 2018-1105, 2018-1302, 2018-1438. Also rep-
resented by ROBERT EVAN SOKOHL, RICHARD M.
BEMBEN, JON WRIGHT.

KATHERINE TWOMEY ALLEN, Appellate Staff, Civil Division, United States Department of Justice, Washington, DC, argued for intervenor United States. Also represented by MARK R. FREEMAN, SCOTT R. MCINTOSH, JOSEPH H. HUNT; THOMAS W. KRAUSE, JOSEPH MATAL, FARHEENA YASMEEN RASHEED, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA.

AMY J. NELSON, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, argued for intervenor Andrei Iancu in 2018-1443. Also represented by THOMAS W. KRAUSE, JOSEPH MATAL, FARHEENA YASMEEN RASHEED.

Before HUGHES, MAYER, and LINN, *Circuit Judges*. HUGHES, *Circuit Judge*.

Trading Technologies International, Inc., appeals four Covered Business Method Review decisions of the Patent Trial and Appeal Board finding Trading Technologies' patents ineligible under 35 U.S.C. § 101. Recently, this Court issued two precedential opinions affirming Board decisions finding several of Trading Technologies related patents unpatentable under § 101. *Trading Techs. Int'l, Inc. v. IBG LLC*, 921 F.3d 1084 (Fed. Cir. 2019) (IBG I); *Trading Techs. Int'l, Inc. v. IBG LLC*, 921 F.3d 1378 (Fed. Cir. 2019) (IBG II). The parties submitted supplemental briefing on whether *IBG I* dictated the outcome of the present appeals. The parties also discussed the effect of *IBG I* and *IBG II* at oral argument.

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We are not persuaded by Trading Technologies' arguments that the patents at issue here, U.S. Patent Nos. 7,412,416 B2; 7,818,247 B2; 7,685,055 B2; and 7,693,768 B2, are distinguishable from the patents invalidated in *IBG I* and *IBG II*. Like *IBG I* and *IBG II*, the challenged patents “focus[] on improving the trader, not the functioning of the computer.” *IBG II*, 921 F.3d at 1383; *see also IBG I*, 921 F.3d at 1091. Although these patents may provide different information than the patents in *IBG I* and *IBG II*, information is “intangible” and its “particular content... does not change its character as information.” *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016). We therefore hold that *IBG I* and *IBG II* control and affirm the Board's decisions.

We also find Trading Technologies waived its constitutional arguments. *See IBG II*, 921 F.3d at 1385.

AFFIRMED

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NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

**TRADING TECHNOLOGIES INTERNATIONAL,
INC.,**
Appellant

v.

IBG LLC, INTERACTIVE BROKERS LLC,
Appellees

UNITED STATES,
Intervenor

2018-1489

Appeal from the United States Patent and Trademark
Office, Patent Trial and Appeal Board in No.
CBM2016-00090.

JUDGMENT

MICHAEL DAVID GANNON, Baker & Hostetler LLP,
Chicago, IL, argued for appellant. Also represented by
LEIF R. SIGMOND, JR., JENNIFER KURCZ; ALAINA J.
LAKAWICZ, Philadelphia, PA; STEVEN BORSAND, JAY
QUENTIN KNOBLOCH, Trading Technologies Interna-
tional, Inc., Chicago, IL.

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BYRON LEROY PICKARD, Sterne Kessler Goldstein & Fox, PLLC, Washington, DC, argued for appellees. Also represented by ROBERT EVAN SOKOHL, RICHARD M. BEMBEN, WILLIAM H. MILLIKEN, JON WRIGHT.

MELISSA N. PATTERSON, Appellate Staff, Civil Division, United States Department of Justice, Washington, DC, argued for intervenor. Also represented by MARK R. FREEMAN, KATHERINE TWOMEY ALLEN, COURTNEY DIXON, SCOTT R. MCINTOSH, JOSEPH H. HUNT; THOMAS W. KRAUSE, JOSEPH MATAL, FARHEENA YASMEEN RASHEED, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA.

THIS CAUSE having been heard and considered, it is

ORDERED and ADJUDGED:

PER CURIAM (NEWMAN, DYK, and WALLACH, *Circuit Judges*).

AFFIRMED. See Fed. Cir. R. 36.

ENTERED BY ORDER OF THE COURT

July 1, 2019
Date

/s/ Peter R. Marksteiner
Peter R. Marksteiner
Clerk of Court

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NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

**TRADING TECHNOLOGIES INTERNATIONAL,
INC.,**
Appellant

v.

IBG, LLC, INTERACTIVE BROKERS, LLC,
Appellees

UNITED STATES,
Intervenor

2018-1302

Appeal from the United States Patent and
Trademark Office, Patent Trial and Appeal Board in
No. CBM2016-00054.

**ON PETITION FOR PANEL REHEARING
AND REHEARING EN BANC**

Before PROST, *Chief Judge*, NEWMAN, LOURIE, DYK,
MOORE, O'MALLEY, REYNA, WALLACH, TARANTO, CHEN,
and HUGHES, *Circuit Judges**.

* Circuit Judge Stoll did not participate.

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PER CURIAM.

ORDER

Appellant Trading Technologies International, Inc. filed a combined petition for panel rehearing and rehearing en banc. The petition was referred to the panel that heard the appeal, and thereafter the petition for rehearing en banc was referred to the circuit judges who are in regular active service.

Upon consideration thereof,

IT IS ORDERED THAT:

The petition for panel rehearing is denied.

The petition for rehearing en banc is denied.

The mandate of the court will issue on September 10, 2019.

FOR THE COURT

September 3, 2019
Date

/s/ Peter R. Marksteiner
Peter R. Marksteiner
Clerk of Court

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NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

**TRADING TECHNOLOGIES INTERNATIONAL,
INC.,**
Appellant

v.

IBG LLC, INTERACTIVE BROKERS LLC,
Appellees

UNITED STATES,
Intervenor

2018-1489

Appeal from the United States Patent and Trademark
Office, Patent Trial and Appeal Board in No.
CBM2016-00090.

**ON PETITION FOR PANEL REHEARING
AND REHEARING EN BANC**

Before PROST, *Chief Judge*, NEWMAN, LOURIE, DYK,
MOORE, O'MALLEY, REYNA, WALLACH, TARANTO, CHEN,
and HUGHES, *Circuit Judges**.

* Circuit Judge Stoll did not participate.

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PER CURIAM.

ORDER

Appellant Trading Technologies International, Inc. filed a combined petition for panel rehearing and rehearing en banc. The petition was referred to the panel that heard the appeal, and thereafter the petition for rehearing en banc was referred to the circuit judges who are in regular active service.

Upon consideration thereof,

IT IS ORDERED THAT:

The petition for panel rehearing is denied.

The petition for rehearing en banc is denied.

The mandate of the court will issue on September 25, 2019.

FOR THE COURT

September 18, 2019
Date

/s/ Peter R. Marksteiner
Peter R. Marksteiner
Clerk of Court

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UNITED STATES PATENT AND
TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND
APPEAL BOARD

IBG LLC and INTERACTIVE BROKERS LLC,
Petitioner,

v.

TRADING TECHNOLOGIES INTERNATIONAL,
INC.,
Patent Owner.

Case CBM2016-00009
Patent No. 7,685,055 B2

Before SALLY C. MEDLEY, MEREDITH C. PETRA-
VICK, and JEREMY M. PLENZLER, *Administrative
Patent Judges*.

PETRAVICK, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Covered Business Method Patent Review
35 U.S.C. § 328(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. Background

IBG LLC and Interactive Brokers LLC¹ (collectively, “Petitioner”) filed a Petition (Paper 5, “Pet.”) on October 23, 2015 that requests review under the transitional program for covered business method patents of U.S. Patent No. 7,685,055 B2 (Ex. 1001, “the ‘055 patent”). Petitioner challenges the patentability of claims 1-19 (“the challenged claims”) of the ‘055 patent under 35 U.S.C. §§ 101 and 103. On April 28, 2016, we instituted a covered business method patent review on the following grounds:

Ground	Prior Art	Challenged Claims
§ 101	n/a	1–19
§ 103	TSE ²	1, 3, 4, 6–15 and 17–19
§ 103	TSE and Gutterman ³	2 and 5
§ 103	TSE and Belden ⁴	16

Paper 20 (“Institution Decision” or “Inst. Dec.”).

¹ This proceeding was terminated with respect to CQG, INC. and CQGT, LLC and they are no longer petitioners in this proceeding. *See* Paper 16.

² Tokyo Stock Exchange Operation System Division, FUTURES/OPTION PURCHASING SYSTEM TRADING TERMINAL OPERATION GUIDE (1998) (Ex. 1008).

³ Gutterman et al., U.S. Patent No. 5,297,031 (issued Mar. 22, 1994) (Ex. 1006).

⁴ Belden et al., WO 90/11571 (published Oct. 4, 1990) (Ex. 1010).

Thereafter, Trading Technologies International, Inc. (“Patent Owner”) filed a Patent Owner’s Response on July 21, 2016 (Paper 32, “PO. Resp.”) and Petitioner filed a Reply (Paper 42, “Pet. Reply”) to Patent Owner’s Response.

Patent Owner filed a Motion for Observations (Paper 52, “PO Mot. for Observations”) and Petitioner filed a response (Paper 54) to Patent Owner’s Motion for Observations.

Petitioner filed a Motion to Exclude (Paper 49, “Pet. Mot. to Exclude”), and Patent Owner filed an Opposition (Paper 57) to Patent Owner’s Motion. Petitioner filed a Reply (Paper 60) in support of its Motion.

Patent Owner filed a Motion to Exclude (Paper 59, “PO Mot. to Exclude”) and Petitioner filed an Opposition (Paper 55) to Patent Owner’s Motion. Patent Owner filed a Reply (Paper 61) in support of its Motion.

We held a hearing of this case on January 6, 2017. Paper 70 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 328(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1-19 of the ’055 patent are patent ineligible under 35 U.S.C. § 101.

B. Related Matters

The '055 patent is the subject of numerous related U.S. district court proceedings. Pet. 2–3; Paper 8, 2–8; Paper 17, 1.

The '055 patent was the subject of a petition for covered business method patent review in *TD Ameritrade Holding Corp. v. Trading Technologies International, Inc.*, CBM2014-00137 (PTAB). In CBM2014-00137, covered business method patent review terminated prior to entry of a final written decision, due to settlement between the parties.

C. The '055 Patent

The '055 patent is titled “System and Method for Automatic Re-positioning of Market Information in a Graphical User Interface,” and issued March 23, 2010, from Application No. 11/417,547 filed May 3, 2006. Ex. 1001, 1.

The '055 patent discloses that many exchanges throughout the world use electronic trading. *Id.* at 1:36–38. Exchange participants use specialized interactive trading screens to monitor positions on the exchange. *See Id.* at 2:3–6. “The bids and asks in the market make up the market data and everyone logged on to trade can receive this information if the exchange provides it.” *Id.* at 2:27–28.

The '055 patent discloses a graphical user interface (“GUI”) displaying information related to a commodity and a method of automatically re-positioning the information. *Id.* at Abstract. The '055 patent’s Figure 16A is reproduced below.

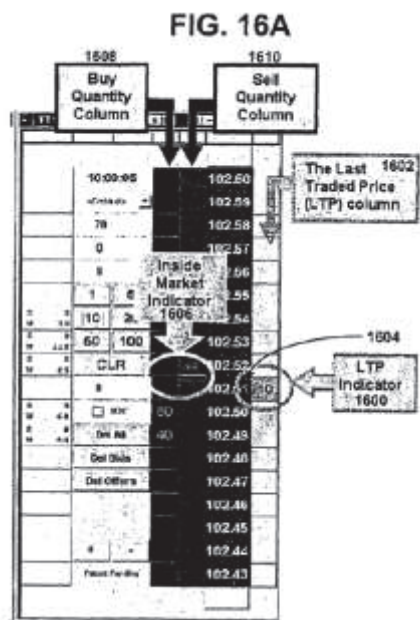


Figure 16A depicts the GUI of the '055 patent. The GUI includes a plurality of columns, including a static price axis, which includes a plurality of price values for the commodity, such as “102.60.” *Id.* at Fig. 16A; 7:67–8:18. Columns 1608 and 1610 are aligned with the static price axis and dynamically display buy (i.e., bid) quantities and sell (i.e., ask) quantities, respectively, for the corresponding price values of the static price axis. *Id.* at Fig. 16A; 26:10–11. Column 1602 displays the last traded price (“LTP”), and the inside market (i.e., the highest buy price and lowest sell price at which there is quantity currently in the market) is marked with inside market indicator 1606, which is a solid line spanning columns 1608 and 1610. *Id.* at Fig. 16A; 26:3–14.

The GUI can re-position a designated item of interest, such as the LTP or inside market indicator, in

the display. *Id.* at 26:4–45. For example, if the LTP or inside market moves a designated number of cells away from the top or bottom of the display screen, the display, including the static price axis, is repositioned so that LTP or inside market is centered on the display. *See Id.* Manual re-positioning can also be used in conjunction with automatic re-positioning. *Id.* at 26:33–37.

D. Illustrative Claim

Claims 1 and 17 of the '055 patent are independent. Claim 1 recites a method, and claim 17 recites a corresponding computer readable medium. Claim 1 of the '055 patent is illustrative of the challenged claims and is reproduced below.

1. A method for re-positioning a static price axis on a graphical user interface for displaying market information of a commodity being traded at an electronic exchange, the method comprising:

receiving market information relating to a commodity from an electronic exchange via a computing device, the market information comprising an inside market with a current highest bid price and a current lowest ask price for the commodity;

displaying a first plurality of price levels along a static price axis on a graphical user interface of a display device associated with the computing device, where the first plurality of price levels range from a lowest value to a highest value along the static price axis;

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in response to an input command received via an input device associated with the computing device, adjusting the first plurality price levels among a range of price levels to an adjusted plurality of price levels including the first plurality of price levels;

displaying a bid and ask display region on the graphical user interface, the bid and ask display region comprising a plurality of locations corresponding to the first plurality of price levels displayed along the static price axis, wherein each location corresponds to one of the first plurality of price levels, and wherein a number of the plurality of locations changes according to adjusting the first plurality of price levels;

displaying a first indicator representing a quantity associated with the current highest bid price at a first location in the plurality of locations of the bid and ask display region, wherein the first indicator ascends or descends the static price axis as changes in the current highest bid price occur as a result of each of the plurality of price levels along the static price axis not changing positions on the graphical user interface unless a reposition command is received;

displaying a second indicator representing a quantity associated with the current lowest ask price at a second location in the plurality of locations of the bid and ask display region, wherein the second indicator ascends or descends the static price axis as changes in the

current lowest ask price occur as a result of each of the plurality of price levels along the static price axis not changing positions on the graphical user interface unless the reposition command is received;

receiving the reposition command to reposition the static price axis when a designated price is within a designated number of price levels from the lowest value or the highest value along the static price axis; and

responsive to receiving the reposition command, automatically re-positioning the static price axis on the graphical user interface such that a current inside market price is displayed at a new desired location.

II. ANALYSIS

A. Claim Construction

In a covered business method patent review, the Board interprets claim terms in an unexpired patent according to the broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.300(b); *see Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as they would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim

terms must be set forth with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

i. “static price axis”

Petitioner argues that the ’055 patent defines “static price axis” as “a price column where prices ‘do not normally change positions unless a re-centering command is received.’” Pet. 16–17 (citing Ex. 1001, 8:16–18; Ex. 1003 ¶ 71).

Patent Owner proposes two “clarifications” to this definition. PO Resp. 40–41. First, Patent Owner argues that “the construction requires that the price levels do not change positions unless a re-centering *or repositioning command* is received” to be consistent with the claim language itself. *Id.* at 40. Second, Patent Owner argues that “the construction should [not] be limited to a price column, but should refer to a reference line.” *Id.* Additionally, Patent Owner argues that a price axis is “a reference line, against which bids/ask[s] are plotted, that does not skip price levels” and that “a price level is a location/area provided on the screen with which a price may be (but is not required to be) displayed.” *Id.* at 41 (citing Ex. 2169 ¶¶ 75–81).

Upon consideration of the parties’ arguments and evidence, we are persuaded that the broadest reasonable construction, in light of the specification of the ’055 patent, of “static price axis” is a price column or reference line where prices do not normally change positions unless a re-centering or re-positioning command is received. This is consistent with the ’055 patent, which states:

It is to be understood that, in this context, static does not mean immovable, but rather means fixed in relation. For example, with a static price scale, the scale itself may be movable, but the prices represented remain fixed in relation to each other, subject to consolidation or expansion.

Ex. 1001, 4:53–58. This also is consistent with the claim language, itself, which includes steps of receiving a re-positioning command and, in response, re-positions the static price axis. Ex. 1001, 34:60–67. We also are persuaded that a “static price axis” includes a reference line along which bids or asks are plotted. This is consistent with the ’055 patent disclosure of the static price axis and the plain meaning of the term. *See Id.* at 7:67–8:16, Ex. 2071, 4 (dictionary definition of “axis”).

We, however, are not persuaded that the broadest reasonable interpretation requires a price axis that does not skip price levels and that price levels are locations/areas provided on the screen with which a price may be (but is not required to be) displayed. Patent Owner’s proposed clarification is inconsistent with the ’055 patent. The ’055 patent discloses that

[t]he representative prices for the given commodity are shown in column 304 [i.e., the price axis], where the prices are static and increment in “ticks,” where a tick is the minimum change in a price value that is set by the exchange for each commodity. The prices can be displayed as ticks, as multiples of ticks or in any other fashion... Other price display convention may alternatively be used, as long as the

requisite price information is conveyed to the user.

Ex. 1001, 7:67–8:9; *see also Id.* at 7:43–50 (disclosing that the static prices can be displayed in any matter and that just market depth levels or working orders can be displayed). The '055 patent also discloses displaying indicators in only a portion of a cell because a price falls between prices in a static price scale. *See Id.* at 13:58–67, 17:65–18:2, 18:47–51, 29:25–37.

We determine that the broadest reasonable interpretation in light of the specification of the '055 patent of static price axis is a price column or reference line where prices do not normally change positions unless a re-centering or re-positioning command is received.

ii. “computer readable medium”

Claims 17–19 are directed to “[a] computer readable medium having computer-readable instructions thereon.” *See* Ex. 1001, 36:1–2. Petitioner contends that, when given the broadest reasonable interpretation, the “computer readable medium” of claims 17–19 encompasses transitory, propagating signals. Pet. 33–34 (citing *In re Nuijten*, 500 F.3d 1346, 1357 (Fed. Cir. 2007)).

Patent Owner argues that it would be unreasonable to construe claims 17–19 as encompassing signals *per se*. PO Resp. 25–26. First, Patent Owner argues that “the USPTO guidance relied upon” is directed to examination, which is pre-issuance, and these proceedings are post-issuance. *Id.* at 25. Patent Owner contends that “it would be unreasonable to adopt a construction that would have made a patent invalid

at the time of issuance.” *Id.* Second, Patent Owner argues that intrinsic evidence in the prosecution history show that the claims are directed to non-transitory media and that this is consistent with the specification of the ’055 patent, which describes the relevant field as being interface software run on an end-user computer or terminal. *Id.* (citing Ex. 1002, 165, Ex. 1001, 2:1–6, 4:60–5:7).

Upon consideration of the parties’ arguments and evidence, we are persuaded that the broadest reasonable construction, in light of the specification of the ’055 patent, of computer readable medium encompasses transitory, propagating signals. We are not persuaded by Patent Owner that this construction is inconsistent with the specification of the ’055 patent. We are not persuaded that, because the ’055 patent describes the software running on an end-user computer or terminal, the computer readable medium is limited to non-transitory media. As Petitioner points out, “[t]he specification of the ’055 patent neither defines nor provides examples of a computer-readable medium.” Pet. 33. It does not limit computer readable medium to non-transitory media or preclude transitory propagating signals per se. *See Subject Matter Eligibility of Computer-Readable Media*, 1351 Off. Gaz. Pat. Office 212 (Feb. 23, 2010) (“The broadest reasonable interpretation of a claim drawn to a computer readable medium...typically covers forms of non-transitory tangible medium and transitory propagating signals per se....”).

Patent Owner argues that “the USPTO guidance relied upon” is directed to examination in a pre-issuance context and, thus, should not be relied upon in a

post-issuance context. PO Resp. 25. It is not clear from Patent Owner's argument to what USPTO guidance Patent Owner is referring as Patent Owner provided no citation to any USPTO guidance. *See Id.* In our Institution Decision, we cited *Ex parte Mewherter*, 107 USPQ2d 1857, 1859–63 (PTAB May 8, 2013) (precedential). Inst. Dec. 25, n.7. *Ex parte Mewherter* refers to the guidance in *Subject Matter Eligibility of Computer-Readable Media*. *Ex parte Mewherter*, 107 USPQ2d at 1859. Inasmuch as Patent Owner's argument is directed to *Subject Matter Eligibility of Computer-Readable Media*, Patent Owner's argument is unpersuasive. Although the guidance provided in *Subject Matter Eligibility of Computer-Readable Media* is not binding upon the Board, Patent Owner provides no persuasive reason for the Board to depart from this guidance. Like in a pre-issuance context, during covered business method patent review, claims are given their broadest reasonable interpretation in light of the specification. 37 C.F.R. § 42.300(b); *see Cuozzo Speed Tech.*, 136 S. Ct. at 2144–46.

Further, we are not persuaded by Patent Owner that intrinsic evidence in the prosecution history shows that the claims are directed to non-transitory media. *See* PO Resp. 25. Patent Owner directs our attention to a statement made by the examiner in the prosecution history of the '055 patent—"a computer readable medium (known in the computer art as a floppy disk, cd-rom, hard drive, zip drive, jazz drive etc.)." *Id.* (quoting Ex. 1002, 165). Contrary to Patent Owner's argument, this statement does not limit computer readable medium to non-transitory media but allows for other types of media.

We determine that the broadest reasonable interpretation of “computer readable medium having computer-readable instructions thereon,” in light of the specification of the ’055 patent, encompasses transitory, propagating signals.

iii. Other Terms

We do not need to construe any other claim terms for purposes of our decision. *See, e.g., Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed ‘to the extent necessary to resolve the controversy.’”) (citation omitted).

*B. Requirements for Covered Business
Method Patent Review*

Section 18 of the AIA⁵ provides for the creation of a transitional program for reviewing covered business method patents. Section 18 limits review to persons or their privies who have been sued or charged with infringement of a “covered business method patent,” which does not include patents for “technological inventions.” AIA § 18(a)(1)(B), (d)(1); *see* 37 C.F.R. § 42.302.

In compliance with 37 C.F.R. § 42.302(a), Petitioner certifies that it has been sued for infringement of the ’055 patent. Pet. 3; *see* Paper 8, 3.

i. “Method or Corresponding Apparatus for Performing Data Processing or Other Operations Used in the Practice, Administration or Management of a Financial Product or Service”

⁵ Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284, 329 (2011) (“AIA”).

The statute defines a “covered business method patent” as

[a] patent that claims a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service.

AIA § 18(d)(1); *see* 37 C.F.R. § 42.301(a). A covered business method patent can be broadly interpreted to encompass patents claiming activities that are financial in nature. Transitional Program for Covered Business Method Patents—Definitions of Covered Business Method Patent and Technological Invention, 77 Fed. Reg. 48734, 48735 (Aug. 14, 2012); *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1338–41 (Fed. Cir. 2016) (determining that a patent was a covered business method patent because it claimed activities that are financial in nature); *Unwired Planet, LLC v. Google, Inc.*, 841 F.3d 1376, n. 5 (Fed. Cir. 2016) (stating that “we endorsed the ‘financial in nature’ portion of the standard as consistent with the statutory definition of ‘covered business method patent’ in *Blue Calypso*”), *Versata Development Group, Inc. v. SAP America, Inc.*, 793 F.3d 1306, 1324–25 (Fed. Cir. 2015) (“[The statute] on its face covers a wide range of finance-related activities.”).

A patent need have only one claim directed to a covered business method to be eligible for review. 77 Fed. Reg. at 48,736 (Response to Comment 8). We take claim 1 as representative.

Petitioner contends that the ’055 patent is a covered business method patent because it claims a

method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service. Pet. 3–5. Petitioner argues that claims 1 and 17 are directed to a method and corresponding apparatus for displaying and re-positioning market data used for trading commodities, which is a financial activity. *Id.* at 4–5. Petitioner additionally argues that claim 16 claims a financial activity, because it recites sending a trade order to an electronic exchange. *Id.* Petitioner further argues that the '055 patent discloses that it is directed to electronic trading, which is a financial activity. *Id.* (citing Ex. 1001, 1:29).

Patent Owner disagrees. Patent Owner does not dispute that the claims of the '055 patent “include financial terms” but disputes that the claims perform data processing or other operations, as required by the statute. PO Resp. 26–28. First, Patent Owner argues that “data processing” should be interpreted according to the definition of “data processing” found in the glossary for class 705 of the United States Patent Classification System, which is “[a] systematic operation on data in accordance with a set of rules which results in a significant change in the data.” *Id.* at 26–27 (quoting Ex. 2121, 4). Patent Owner argues that the claims of the '055 patent are not directed to data processing under this definition because the claims are concerned with displaying information in a specific manner and not concerned with processing the information that is displayed. PO Resp. 27. Patent Owner asserts that the claimed invention is not directed to a business method. *Id.* at 27–28. According to Patent Owner, the legislative history “makes clear

that improvements to software tools or GUIs, even if used for trading or other financial activities, were intended to be outside the scope of CBM [review].” *Id.* at 34 (citing Ex. 2126, S5428, S5433 (157 Cong. Rec. S5428 (daily ed. Sept. 8, 2011) (statements of Sens. Schumer and Durbin))).

As an initial matter, Patent Owner’s arguments concerning the legislative history are not persuasive. Although the legislative history includes certain statements that certain novel software tools and graphical user interfaces that are used by the electronic trading industry worker are not the target of § 18 of the AIA (*see* Ex. 2126, S5428, S5433) the language of the AIA, as passed, does not include an exemption for user interfaces for commodities from covered business method patent review. Indeed, “the legislative debate concerning the scope of a CBM review includes statements from more than a single senator. It includes inconsistent views....” *Unwired Planet*, 841 F.3d at 1381. For example, in contrast to the statements cited by Patent Owner, the legislative history also indicates that “selling and trading financial instruments and other securities” is intended to be in the scope of covered business method patent review. *See* Ex. 2126, S5432 (statements of Sen. Schumer). “[T]he legislative history cannot supplant the statutory definition actually adopted.... The authoritative statement of the Board’s authority to conduct a CBM review is the text of the statute.” *Unwired Planet*, 841 F.3d at 1381. Each claimed invention has to be evaluated individually to determine if it is eligible for a covered business method patent review. A determination of whether a patent is eligible for a covered business

method patent review under the statute is made on a case-by-case basis. 37 C.F.R. § 42.301(b).

Turning to the '055 patent, we are persuaded by Petitioner that the '055 patent is a covered business method patent. According to the specification of the '055 patent, “the present invention is directed to electronic trading” (*Id.* at 1:28) and, in particular, to repositioning market information in a GUI. (*Id.* at 3:3–5). The information relates to tradable objects, which are financial products, such as stocks, options, bonds, futures, currency, etc. *Id.* at 5:8–17. The '055 patent discloses that the invention involves processing the information for display — “[t]he trading application ...processes this information.” Ex. 1001, 6:26–30.

The disclosed invention is reflected in claim 1 of the '055 patent, which is directed to “[a] method for repositioning a static price axis on a graphical user interface for displaying market information of a commodity being traded at an electronic exchange.” Ex. 1001, 34:15–17. The claimed method recites steps of displaying market information received from an electronic exchange along a static price axis, adjusting the static price axis, and repositioning the static price axis. *Id.* at 34:19–67.

Electronic trading is a financial service or activity. Tradable objects are financial products. A method of computing and displaying financial information for a tradable object on a graphical user interface for use in electronic trading is a method for performing data processing or other operations used in the practice, administration, or management of a financial product or service. We, thus, are persuaded by Petitioner that

the '055 patent is a covered business method patent. *See* Pet. 4–5, Pet. Reply. 29–30.

Patent Owner argues that the statute requires that the “data processing” cause a significant change in the data, and that data processing that merely displays the data, like the data processing disclosed in the '055 patent, is not significant. PO Resp. 26–27. Patent Owner’s argument is based upon the assumption that “data processing” in the statute is interpreted according to the definition of “data processing” found in the glossary for class 705 of the United States Patent Classification System. *See Id.* Patent Owner, however, does not sufficiently explain why this definition is controlling, as opposed to the plain meaning of “data processing.” We, thus, are not persuaded that “data processing” as recited by the statute precludes data processing for the purpose of displaying the data. As pointed out above, the '055 patent, itself, discloses processing market information received from an electronic exchange. Ex. 1001, 6:26–30. We, thus, are not persuaded that the '055 patent does not claim “performing data processing...used in the practice, administration, or management of a financial product or service” (AIA § 18(d)(1)).

In any event, the statute does not limit covered business method patents to only those that claim methods for performing data processing used in the practice, administration, or management of a financial product or service. It includes methods for performing “other operations” used in the practice, administration, or management of a financial product or service. Claim 1’s method for repositioning a static price axis on a graphical user interface for displaying

market information of a commodity being traded at an electronic exchange is an operation used in the practice, administration, or management of a financial product or service.

We determine that Petitioner has shown by a preponderance of the evidence that the '055 patent is a covered business method patent.

ii. Technological Invention Exception

Even if a patent includes claims that would otherwise be eligible for treatment as a covered business method, review of the patent is precluded if the claims cover only “technological invention[s],” as defined by 37 C.F.R. § 42.301(b). The definition of “covered business method patent” in § 18(d)(1) of the AIA does not include patents for “technological inventions.”

To determine whether a patent is for a technological invention, we consider “whether the claimed subject matter as a whole [1] recites a technological feature that is novel and unobvious over the prior art; and [2] solves a technical problem using a technical solution.” 37 C.F.R. § 42.301(b). The following claim drafting techniques, for example, typically do not render a patent a “technological invention”:

(a) Mere recitation of known technologies, such as computer hardware, communication or computer networks, software, memory, computer-readable storage medium, scanners, display devices or databases, or specialized machines, such as an ATM or point of sale device.

(b) Reciting the use of known prior art technology to accomplish a process or method, even if

that process or method is novel and non-obvious.

(c) Combining prior art structures to achieve the normal, expected, or predictable result of that combination.

Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,763–64.

Both prongs must be satisfied in order for the patent to be excluded as a technological invention. *See Versata*, 793 F.3d at 1326–7.

Petitioner contends that the claims of the '055 patent do not recite a technological feature that is novel and unobvious over the prior art and do not solve a technical problem using a technical solution. Pet. 6–12. Petitioner argues that the claims are “implemented using conventional computer hardware such as personal computers, servers, networks, displays, and input devices and therefore do not include a technological feature or implement a technological solution.” *Id.* at 6–7. Petitioner also argues that the '055 patent solves a business problem: “reading a display of prices for a commodity and entering a trade order before the price for the commodity changes.” *Id.* at 8–9 (citing Ex. 1001, 2:16–17, 35–67). Petitioner cites to the Declaration of Kendyl A. Roman (Ex. 1003) and the Declaration of David Rho (Ex. 1004) for support.

Patent Owner argues that “Petitioners fail to address whether the claims recite a technical feature that is purportedly novel and unobvious” and contends that the claimed combination of the adjusting and repositioning feature with the static price axis and dynamic indicators is novel and unobvious. PO

Resp. 29, 31–32. Patent Owner, further, argues that the claims solve a technical problem with a technical solution. *Id.* at 29–32. According to Patent Owner, the claimed invention solves the problem of indicators moving off the display as the market data changes. *See Id.* at 9. Patent Owner contends:

Speed, efficiency, and usability problems were created for some users because, if the indicators were located off, or close to off, the displayed static price axis, the user would have to spend time taking an action such as scrolling or manually repositioning to find the state of the market, and the GUI tool did not convey the state of the market precisely or efficiently for these users.

Id. Patent Owner cites to the Declaration of Eric Gould-Bear (Ex. 2168) and the Declaration of Dan R. Olsen, Jr. (Ex. 2174) for support.

Contrary to Patent Owner’s argument, Petitioner contends in the Petition that the claims do not recite a technical feature that is novel and unobvious. Pet. 6–8. Claim 1 recites a method that requires the display of certain information in a certain arrangement on a GUI and allows for the adjusting or re-positioning of the information on the display. Ex. 1001, 34:15–67. The first step of the method is to receive market information via a computer for a tradeable object from an electronic exchange. *Id.* at 34:19–23. The subsequent steps of the method relate to displaying and positioning/repositioning the market information on a GUI. *Id.* at 34:24–67. The ’055 patent discloses that it

is known that electronic exchanges provide market information to connected traders' computers. *See Id.* at 2:27–28.

As Petitioner points out, the '055 patent, itself, discloses that the technical features of claim 1 were known. Pet. 6–8. The '055 patent discloses that its system can be implemented “on any existing or future terminal or device.” Ex. 1001, 5:2–7, 39–43. Computers or terminals are known to include displays. The '055 patent discloses that the input device can be a mouse, a known input device. Ex. 1001, 2:1–13, 5:24–27. The '055 patent discloses “commercially available trading applications” that provide electronic trading interfaces that display bid and ask quantities in association with a static price scale. *Id.* at 5:66–6:7. The '055 patent states that “[t]he preferred embodiments, however, are not limited to any particular product that performs the translation, storage and/or display functions.” *Id.* at 5:66–6:7.

The trading application...processes this information and maps it to positions in a theoretical grid program or any other comparable mapping technique for mapping data to a screen. The physical mapping of such information to a screen grid, for display on a client device..., may be done by any technique known to those skilled in the art. The present invention is not limited by the method used to map the data to the screen display.

Id. at 6:27–35.

Given the above, we determine that claim 1 does not recite a technological feature that is novel and unobvious over the prior art. Because both prongs must be satisfied for a patent to be excluded from covered business method patent review for being a technological invention, we find that the '055 patent is eligible for a covered business method patent review for at least the reason that claim 1 fails to recite a technological feature that is novel and unobvious.

Notwithstanding our determination above, we also are persuaded by Petitioner that the '055 patent does not solve a technical problem with a technical solution.

The '055 patent discloses that exchanges are volatile and move rapidly and that to profit a trader must react quickly. Ex. 1001, 2:14–16.

To profit in these markets, traders must be able to react quickly. A skilled trader with the quickest software, the fastest communications, and the most sophisticated analytics can significantly improve the trader's own or the trader's firm's bottom line. The slightest speed advantage can generate significant returns in a fast moving market. In today's securities markets, a trader lacking a technologically advanced interface is at a severe competitive disadvantage.

Id. at 2:16–24. “The more time a trader takes entering an order, the more likely the price on which the trader wanted to bid or offer will change or not be available in the market” because “[t]he market is fluid as many

traders are sending order to the market simultaneously.” *Id.* at 2:39–43. “If a trader intends to enter an order at a particular price, but misses the price because the market prices moved before the trader could enter the order, the trader may lose hundreds, thousands, even millions of dollars.” *Id.* at 2:49–53. “It is therefore desirable for electronic trading systems to offer tools that can assist a trader in adapting to an electronic marketplace, and help the trader to make trades at desirable prices.” *Id.* at 2:64–67. “A trader may use automatic positioning to always have a visual reference of where the market is trading, increasing the likelihood of entering quantities and having those quantities filled at desirable prices.” *Id.* at 26:30–34

As can be seen from the above, the problem disclosed in the ’055 patent is a trader having to read a display of prices for a commodity and enter a trade order before the price for the commodity changes. As Petitioner points out, this is a financial issue or a business problem, not a technical problem. Pet. 8–10. If the market or exchange did not rapidly change, then there would be no need for a trader to enter orders rapidly or for a GUI to accomplish such. We, thus, determine that at least claim 1 of the ’055 patent does not recite a technical solution to a technical problem, as required by the second prong of the test to determine whether a patent is for a technological invention.

As the ’055 patent is a covered business method patent and is not precluded for being a technological invention, the ’055 patent is eligible for covered business method patent review.

C. Patent Subject Matter Eligibility

Petitioner contends that claims 1–19 are unpatentable under 35 U.S.C. § 101 as being directed to ineligible subject matter. Pet. 18–34. Patent Owner disagrees. PO Resp. 13–24.

Patent-eligible subject matter is defined in § 101 of the Patent Act, which recites:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

There are, however, three judicially created exceptions to the broad categories of patent-eligible subject matter in § 101: laws of nature, natural phenomena, and abstract Ideas. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012). Although an abstract Idea, itself, is patent-ineligible, an application of the abstract Idea may be patent-eligible. *Alice*, 134 S. Ct. at 2355. Thus, we must consider “the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Id.* (citing *Mayo*, 132 S. Ct. at 1297–98). The claim must contain elements or a combination of elements that are “sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [abstract Idea] itself.” *Id.* (citing *Mayo*, 132 S. Ct. at 1294).

Claims 1–16 recite a method, which falls into the process category of patent-eligible subject matter of § 101. Claims 17–19 recite a computer readable medium having computer-readable instructions thereon. When given the broadest reasonable interpretation, in light of the specification of the ‘055 patent, claims 17–19 encompass subject matter that falls into the manufacture category (e.g., non-transitory media), as well as subject matter that falls outside the four statutory classes of subject matter (e.g., propagating transitory signals).

*i. Subject Matter Outside the Four
Statutory Categories*

First, we turn to Petitioner’s contention that claims 17–19 are unpatentable under 35 U.S.C. § 101 because they encompass subject matter that falls outside the four statutory categories of patentable subject matter. Pet. 33–34. Patent Owner disagrees. PO Resp. 25–26.

Claims 17–19 recite “[a] computer readable medium having computer-readable instructions thereon.” Ex. 1001, 36:1–2. Above, we determine that computer readable medium, when given the broadest reasonable construction in light of the specification of the ‘055 patent encompasses transitory, propagating signals. Transitory, propagating signals are not covered by the four statutory classes of subject matter of 35 U.S.C. § 101. *In re Nuijten*, 500 F.3d at 1352. Petitioner has shown sufficiently that claims 17–19 are unpatentable under 35 U.S.C. § 101 as encompassing subject matter that falls outside the four statutory categories of patentable subject matter.

ii. Abstract Idea

Next, we turn to Petitioner’s contention that claims 1–19 are unpatentable under 35 U.S.C. § 101 as being directed to an abstract Idea. Pet. 18–33. We take independent claim 1 as representative.⁶

Petitioner argues that claim 1 encompasses the abstract Idea of “repositioning market information on a GUI...and electronic trading” which is a “fundamental economic practice long prevalent in our system of commerce.” Pet. 18 (quoting *Bilski v. Kappos*, 130 S. Ct. 3218, 3231 (2010)). Petitioner further argues that providing a trader with financial information to facilitate market trades is subject matter that “can be performed in [the human] mind, or by a [human] using a pen and paper.” *Id.* at 18 (citing *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.2d 1366, 1372 (Fed. Cir. 2011)), 21–24.

“The ‘abstract Idea’ step of the inquiry calls upon us to look at the ‘focus of the claimed advance over the prior art’ to determine if the claim’s ‘character as a whole’ is directed to excluded subject matter.” *Affinity Labs of Texas, LLC v. DirectTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016) (quoting *Genetic Techs. Ltd. v. Merial LLC*, 818 F.3d 1369, 1376 (Fed. Cir. 2016) and *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016); see also *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016). There is no definitive rule to determine what

⁶ Independent claim 17, the only other independent claim, corresponds to claim 1 in that it recites a computer readable medium having computer-readable instructions thereon that causes a computer to execute a method substantially the same as the method of claim 1. Thus, claim 1 is representative of claim 17.

constitutes an “abstract Idea.” Rather, the Federal Circuit has explained that “both [it] and the Supreme Court have found it sufficient to compare claims at issue to those claims already found to be directed to an abstract Idea in previous cases.” *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1334 (Fed. Cir. 2016); see also *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1294 (Fed. Cir. 2016) (explaining that, in determining whether claims are patent-eligible under § 101, “the decisional mechanism courts now apply is to examine earlier cases in which a similar or parallel descriptive nature can be seen—what prior cases were about, and which way they were decided”).

Notwithstanding Patent Owner’s arguments, which we address below, we determine that Petitioner has shown⁷ that claim 1 is directed to the abstract Idea of repositioning market information on a GUI for electronic trading, which is a fundamental economic practice.

Claim 1 recites in the preamble “a method for repositioning a static price axis on a graphical user interface for displaying market information of a commodity being traded at an electronic exchange.” Ex. 1001, 34:15–17. The method steps include receiving current highest bid price and current lowest ask price for a tradable object; displaying a first and adjusted

⁷ As explained above, determining whether a claim is directed to an abstract idea calls upon us to look at the focus of the claimed advance over the prior art. In order to do so, we must make findings of fact as to the prior art at the time of the invention. Those facts must be supported by a preponderance of the evidence. 35 U.S.C. § 326(e).

static price axis displaying market information in locations along the static price axis; and automatically repositioning the static price axis when a designated price is within designated price levels from the lowest value or highest value of the static price axis. *Id.* at 34:19–67. We agree with Petitioner that claim 1 encompasses the abstract Idea of providing a trader with financial information to facilitate market trades, a fundamental economic practice, and steps that can be performed using pen and paper, or even in a trader’s mind. *See* Pet. 27–30.

As can be seen from its steps, the focus of claim 1 is repositioning market information displayed on a GUI for electronic trading. This focus is consistent with the disclosure of the ’055 patent, which states that “[t]he preferred embodiments relates to...automatic repositioning of market information in a graphical user interface.” Ex. 1001, 3:3–5. The focus of claim 1 is also consistent with the problem disclosed by the ’055 patent, which is a trader missing an intended price because the market changed during the time required for a trader to read the prices displayed and to enter an order. *Id.* at 1:47–67.

Claim 1 does not recite any limitations that specify how the computer implements the steps or functions for using a GUI. For example, claim 1 does not specify how the computer maps the bid quantities, ask quantities, and prices to the display. The ’055 patent also does not disclose an unconventional or improved method of mapping the bid quantities, ask quantities, and price axis to the display. It states that “[t]he physical mapping of such information to a screen grid for display...may be done by any technique known to

those skilled in the art” and that “[t]he present invention is not limited by the method used to map the data to the screen.” *Id.* at 6:31–35.

The '055 patent discloses that many exchanges throughout the world utilize electronic trading and discloses that it is known that electronic trading includes analyzing displayed market information and updated market information to send trade orders to an exchange. *See Id.* at 1:36–2:12. Exhibit 1018 discloses that long before the '055 patent, traders maintained books that plotted bids and asks (e.g., the market depth) along a price axis. *See Ex. 1018, 44–46.* Figure 4-2 of Exhibit 1018 is reproduced below.

FIGURE 4-2. A page in the specialist's book.

BUY		SELL
BKR R - 100	22	
BKR L - 300 BKR A - 500	1/8	
BKR D - 200 BKR E - 300	1/4	
	3/8	
	1/2	
	5/8	BKR F - 300 BKR G - 600
	3/4	BKR B - 100 BKR M - 200
	7/8	BKR S - 400

Figure 4-2 depicts a page of a book of a trader. *Id.* at 44–45. Orders to buy or sell a commodity are plotted along a price axis. For example, Figure 4-2 shows the best bid at 22¼ and the best ask at 22½. *Id.* at 44. Petitioner’s declarant Mr. Román testifies that:

Claim 1 could be performed by a human using pen-and-paper or a white board. The persons could be told the highest bid and offer, which he or she could plot along a price axis. If the person wanted to adjust the display as recited in claim 1, he or she could do it by redrawing or merely adding additional price levels to the top or bottom... The person could replot with updated data as it came in. If the data plotted off the existing axis (i.e., came within a set number of prices from either end of the axis), the person could reposition the axis by redrawing it.

Ex. 1003 ¶ 69.

Given this, we determine that repositioning market information displayed for electronic trading is a fundamental economic and conventional business practice. We are persuaded by Petitioner that the method of claim 1 could be performed in the human mind or with the aid of pen-and-paper with little difficulty. *See* Pet. 21 (citing Ex. 1018, 44–46; Ex. 1005, Fig. 4; Ex. 1003 ¶¶ 68–70).

The claims at issue here are like the claims at issue in *Affinity Labs*. In *Affinity Labs*, the claim at issue recited an application that enabled a cellular telephone to present a GUI displaying a list of media sources that included selectable items for selecting a regional broadcasting channel. *Affinity Labs*, 838

F.3d at 1255–56. The claim also recited that the cellular telephone was enabled to transmit a request for the selected regional broadcasting channel. *Id.* at 1256. The claims at issue here are also like the claims at issue in *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229 (Fed. Cir. 2016). In *Ameranth*, the claim at issue recited a GUI that displayed menu items in a specific arrangement, a hierarchical tree format. Menu items were selected to generate a second menu from a first menu. *Ameranth* 842 F.3d at 1234. In both *Affinity Labs* and *Ameranth*, the court determined that the claims were not directed to a particular way of programming or designing the software, but instead merely claim the resulting systems. The court thus determined that the claims were not directed to a specific improvement in the way computers operate. *Affinity Labs*, 838 F.3d at 1260–61; *Ameranth*, 842 F.3d at 1241. Here, the claims also recite the resulting GUI and are not directed to specific improvements in the way the computers operate. “Though lengthy and numerous, the claims [that] do not go beyond requiring the collection, analysis, and display of available information in a particular field, stating those functions in general terms, without limiting them to technical means for performing the functions that are arguably an advance over conventional computer and network technology” are patent ineligible. *Elec. Power Grp.*, 830 F.3d at 1351. “Generally, a claim that merely describes an ‘effect or result dissociated from any method by which [it] is accomplished’ is not directed to patent-eligible subject matter.” *Ameranth*, 842 F.3d at 1244 (quoting *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1348 (Fed. Cir. 2015)).

Claim 1 of the '055 patent is unlike the claims at issue in *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014) and *Enfish*. In *DDR Holdings*, the court determined that the claims did not embody a fundamental economic principle or a longstanding commercial practice. The claims at issue in *DDR Holdings* were directed to retaining website visitors, which the court determined was a problem “particular to the Internet.” *DDR Holdings*, 773 F.3d at 1257. The court also determined that the invention was “necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks” and that the claimed invention did not simply use computers to serve a conventional business purpose. *Id.* In *Enfish*, the claim at issue was directed to a data storage and retrieval system for a computer memory. *Enfish*, 822 F.3d at 1336–37. The court determined that the claims were directed to an improvement in the functioning of a computer and were not simply adding conventional computer components to well-known business practices. *Id.* at 1338. Here, in contrast, claim 1 is directed to a fundamental economic principle or a longstanding commercial practice and not directed to an improvement in the computer but simply to the use of the GUI in a method of placing an order based on displayed market information, as well as updating market information.

When we compare claim 1 at issue to those claims already found to be directed to an abstract Idea in previous cases, we are persuaded that claim 1 is more similar to those claims found to encompass an abstract Idea than those determined not to encompass an abstract Idea. Claim 1 is similar to the claims in

Electric Power, which did “not go beyond requiring the collection, analysis, and display of available information in a particular field, stating those functions in general terms, without limiting them to technical means for performing the functions that are arguably an advance over conventional computer and network technology.” *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016).

We have considered all of Patent Owner’s arguments regarding why the claims are not directed to an abstract Idea but are not persuaded by such arguments. PO Resp. 13–20. Patent Owner argues that Petitioner oversimplifies the claims and ignores the structure and functionality recited in the claims, which Patent Owner deems to be the functionality of the claimed GUI itself. *Id.* at 13–14. We disagree that Petitioner has oversimplified the claims and ignores the structure and functionality recited in the claims.

Nor are we persuaded by Patent Owner’s arguments that the claimed GUI improves the functioning of the computer to solve a problem rooted in computer technology. PO Resp. 9–11, 14–17, 22–24. Patent Owner argues that the claims solve a problem with prior GUIs that included a static price axis and dynamic indicators, that the indicators could move off or close to off the displayed static price axis, and the user would have to manually adjust the price axis. *Id.* at 14–15. This problem, however, is not a problem rooted in computer technology. As discussed above, Mr. Roman’s testimony and Exhibit 1018 indicate that indicators moving off or close to off a static price axis occurs when plotting market data manually, which

causes the price axis to have to be adjusted or repositioned. See Ex. 1002 ¶¶ 58–70; Ex. 1018,44-46.

Patent Owner argues that the claims are not directed to an abstract Idea because they are not directed to a fundamental Idea, longstanding commercial practice, a business method, or a generic GUI. PO Resp. 16–20. Patent Owner argues that in contrast to many other cited cases, the claims here are directed to the specific structure, make-up, and functionality of a particular GUI. *Id.* Patent Owner argues that the claimed GUI tool builds on and is an improvement to trading screens like those in the '132 patent and, thus, the claims of the '055 patent are even more clearly patent eligible. *Id.* at 6–9;. The claims of the '055 patent, however, do not build on and are broader in some aspects than the claims of the '132 patent. For example, claim 1 of the '055 patent does not recite the single action order feature claimed by the '132 patent. The '132 patent was involved in *Trading Technologies International, Inc., v. CQG, INC.*, No. 2016-1616, 2017 WL 192716 (Fed. Cir. Jan. 18, 2017). In that case, the court indicated that even those narrower claims are on the line between patent eligibility and ineligibility (*see Id.* at *4 (noting the “close question[] of eligibility”)). The specification of the '055 patent is different, and the '055 patent claims and discloses features not discussed in the '132 patent. Thus, comparing the claims of the patents involved in *Trading Technologies* is not particularly helpful here. *Trading Technologies*, 2017 WL 192716 at *2.

iii. Inventive Concept

Next we turn to “the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Alice*, 134 S. Ct. at 2355 (quoting *Mayo*, 132 S. Ct. at 1297–98).

Petitioner argues that the additional elements of the claims, both individually and as an ordered combination, do not recite anything more meaningful than the abstract Idea. Pet. 29–31. Petitioner further argues that the claims are not rooted in computer technology because they do not overcome a problem specifically arising in the realm of computers or computer networks. *Id.* at 44–46.

Notwithstanding Patent Owner’s arguments, which we address below, we are persuaded that Petitioner has shown that none of the additional claim elements in claim 1 transforms the nature of the claims into a patent-eligible application. Claim 1 of the ’055 patent recites “[a] method for repositioning a static price axis on a graphical user interface for displaying market information.” Ex. 1001, 34:15–16. The method includes a step of receiving information from an electronic exchange. *Id.* at 34:19–23. Claim 1 also recites the adjusting feature and the re-positioning feature. *Id.* at 34:24–33, 60–67. Claim 1 further recites the step of displaying a bid and ask display region, which has locations that correspond to price levels along a static price axis, on a GUI and displaying quantity indicators in the locations. *Id.* at 34:34–59. The indicators move along the static price axis as the market changes. *Id.*

The '055 patent discloses receiving market information from an exchange and displaying the information on a GUI is old and well-known, routine and conventional activity. *Id.* at 1:34–2:34; *see also Id.* at 5:1–6, 5:38–42 (disclosing that any existing terminal device or network architecture could be used). Receiving market data from an exchange is nothing more than routine data gathering and does not transform the abstract Idea into a patent-eligible invention. *See CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1370 (Fed. Cir. 2011).

The '055 patent discloses that the use of software to create specialized interactive trading screens is known and the range of features varies according to the software. Ex. 1001, 2:1–7. The '055 patent also discloses that the physical mapping of the information to the screen could be done by any known technique and that the invention is not limited by the method used to map the data to the screen. *Id.* at 6:26–35. The use of software or a GUI to display market information is a well-understood, routine, conventional activity that does not add significantly more to the abstract Idea. *Mayo*, 132 S. Ct. at 1298. The use of a computer or GUI to display information in a known arrangement (*see* Ex. 1018, 44–46) is nothing more than a mere field of use limitation. “Most obviously, limiting the claims to the particular technological environment...is, without more, insufficient to transform them into patent-eligible applications of the abstract Idea at their core.” *Elec. Power Grp.*, 830 F.3d at 1354.

Given the above, we determine that the individual elements of claim 1 do not transform the nature of the

claim into a patent-eligible application. They do not add significantly more to the abstract Idea or fundamental economic practice. Considering all of the elements as an ordered combination, we determine, on this record, that the combined elements also do not transform the nature of claim 1 into a patent-eligible application.

Patent Owner argues that the claims pass part two of *Alice* because they recite an inventive concept. PO Resp. 19–24. Patent Owner argues that the claims of the '055 patent recite significantly more because the claims allegedly specify a high level of detail, the claimed combination of GUI features/functionality is not pre-solution or post-solution activity, and the claimed functionality was not routine and conventional. *Id.* at 23–24. Patent Owner does not explain sufficiently what about the claims qualifies as an inventive concept and as discussed above the individual elements of the claims do not transform the nature of the claims into a patent-eligible application. They do not add significantly more to the abstract Idea or fundamental economic practice. Contrary to Patent Owner's argument, the claims simply recite the use of a generic computer with routine and conventional functions. Further, considering all of the elements as an ordered combination, we determine that the combined elements also do not transform the nature of the claims into a patent-eligible application.

We determine that Petitioner shows sufficiently that claims 1 and 17 are patent ineligible under 35 U.S.C. § 101.

iv. Dependent Claims

Petitioner contends that the additional elements recited by dependent claims 2–16, 18, and 19 do not add significantly more to the abstract Idea so as to render the claims patent-eligible. Pet. 32–33. On this record, we determine that Petitioner sufficiently demonstrates that dependent claims 2–16, 18, and 19 are patent ineligible under 35 U.S.C. § 101. Patent Owner makes no arguments directed to the additional elements of the dependent claims.

D. Grounds Under 35 U.S.C. § 103

Section 103 forbids issuance of a claim when

the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.

35 U.S.C. § 103. The ultimate determination of obviousness under § 103 is a question of law based on underlying factual findings. *In re Baxter Int'l, Inc.*, 678 F.3d 1357, 1362 (Fed. Cir. 2012) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)). These underlying factual considerations consist of: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of non-obviousness such as “commercial success, long-felt but unsolved needs, failure of others, etc.” *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting *Graham*, 383 U.S. at 17–18).

*i. Obviousness of Claims 1, 3, 4, 6–15
and 17–19 over TSE*

Petitioner contends that claims 1, 3, 4, 6–15 and 17–19 are unpatentable under 35 U.S.C. § 103 over TSE. Pet. 34–65.

Patent Owner disagrees for numerous reasons. PO Resp. 51–84. In particular, Patent Owner contends that TSE is not prior art. *Id.* at 43–50. It is not necessary for us to determine the prior art status of TSE. Regardless of TSE's prior art status, for the reasons discussed below, Petitioner fails to show by a preponderance of the evidence that the claims of the '055 patent are unpatentable over TSE.

a. Overview of TSE

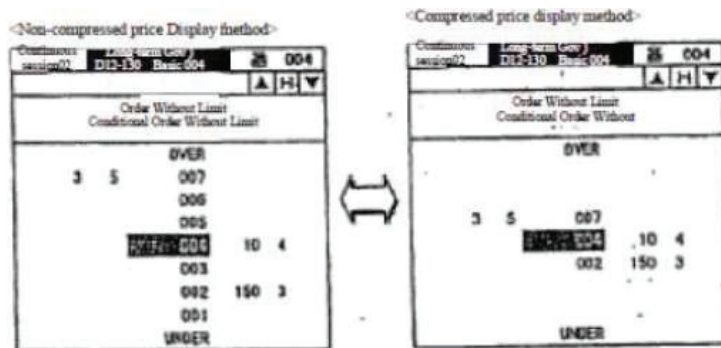
TSE is a guide for operating a trading terminal of the Tokyo Stock Exchange. Ex. 1008, 1. The trading terminal displays a GUI for depicting market information on a Board/Quotation Screen (*see Id.* at 107). The Figure on page 107 of TSE is reproduced below.

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳
01 K13320 (13:17) (2012) Base 13300																			
10	250	Closing	250	15	Prev/Next														
Caution	Market	10	1	15	D	13281													
157	1810	OVER																	
2	1	3	13029																
2	4	132	13028																
4	145	13027																	
2	70	13026																	
5	2	29	13025																
1	20	13024																	
1	10000	13023 #																	
1	10000	13022																	
10	10000	13021																	
10000K																			
13019	17	3	L5	13005															
13018	47	1																	
13017	5	8	L4	13008															
13016	38	3																	
13015	44	8	L3	13009															
13014	46	2																	
13013	123	5	L2	13006															
13012	141	3																	
13011	2	4	L1	13009															
13010	817	3																	
UNDER	0084	108	W	5															

Figure depicting the Board/Quotation Screen.

The Board/Quotation Screen includes a central order price at column 11. *Id.* at 111. To the left and right of order price column 11, are ask and bid orders in respective columns 12, 13, and 14. *Id.*

The Board/Quotation Screen has a compressed mode and an uncompressed mode. Reproduced below is a figure that appears on page 68 of TSE.



The figure depicts the Board/Quotation Screen in compressed and non-compressed mode. In non-compressed mode, all prices (i.e., the claimed adjusted price levels) are displayed on the Board/Quotation Screen, and, in compressed mode, only prices that satisfy certain conditions (i.e., the claimed first plurality of price levels), such as having an order, are displayed. *Id.* at 68. The Board/Quotation Screen can be moved between the compressed mode and uncompressed mode by selecting a radio button using a mouse. *Id.* at 69.

The Board/Quotation Screen also has a basic board screen mode and a scrolling mode. *Id.* at 115. In basic board screen mode, the information is updated so that a “Board Display Center Price” is always displayed in the center. *Id.* TSE discloses that the centering occurs upon the occurrence of different events, such as if the central price falls within the range of the top or bottom three prices. *Id.* In scrolling mode, the central price’s position does not change automatically (*Id.*); however, TSE does disclose a “Home Button” for returning the Board/Quotation Screen to the basic board screen centered on the central price (*Id.* at 110, 116).

b. Independent Claims 1 and 17

Claim 1 recites the following limitations:

displaying a first plurality of price levels along a static price axis on a graphical user interface of a display device associated with the computing device, where the first plurality of price levels range from a lowest value to a highest value along the static price axis;

in response to an input command received via an input device associated with the computing device, adjusting the first plurality price levels among a range of price levels to an adjusted plurality of price levels including the first plurality of price levels;

displaying a bid and ask display region on the graphical user interface, the bid and ask display region comprising a plurality of locations corresponding to the first plurality of price levels displayed along the static price axis, wherein each location corresponds to one of the first plurality of price levels, and wherein a number of the plurality of locations changes according to adjusting the first plurality of price levels

Ex. 1001, 34:24–41. Claim 17 recites similar limitations. *Id.* at 36:11–25.

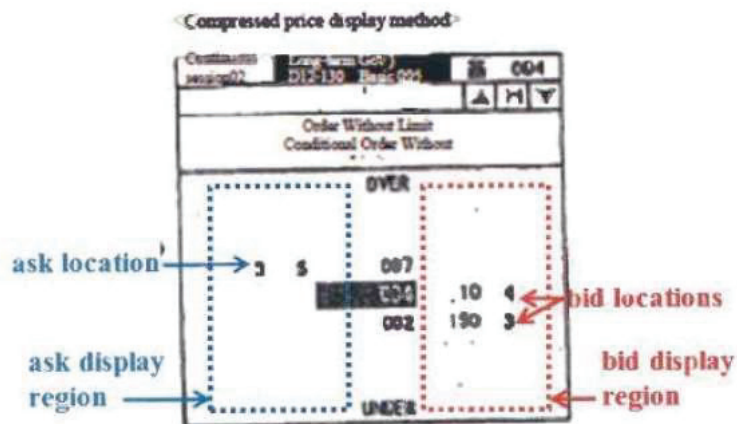
In the Petition, Petitioner asserts that TSE discloses these claim limitations. Pet. 45–52. Petitioner equates price levels 002, 004, and 007 depicted on TSE’s compressed price display, reproduced above, to the claimed first plurality of price levels and equates price levels 001, 002, 003, 004, 005, 006, and 007 depicted on TSE’s non-compressed price display to the claimed adjusted plurality of price levels, also reproduced above. *Id.* at 47. Petitioner argues that TSE teaches the claimed adjustment by transitioning from the compressed display to the non-compressed display. *Id.* at 47.

Petitioner contends that the first plurality of price levels are displayed along a static price axis when

they are displayed along the price axis in the non-compressed display, after the claimed adjustment has occurred. *Id.* at 45–46. Petitioner also contends that the non-compressed display has a bid display region to the right of price axis 11 and an ask display region to the left of price axis 11. *Id.* at 50–51.

With regards to the claimed “plurality of locations corresponding to the first plurality of price levels displayed along the static price axis, wherein each location corresponds to one of the first plurality of price levels” (Ex. 1001, 34:36–39), Petitioner states the following:

FIG. C of Mr. Roman’s Declaration (reproduced below) labels three exemplary locations to highlight that each location correspond to a different price level of the first plurality of price levels displayed along the price axis. (Roman Decl., ¶ 103.)



Roman Decl., FIG. C

When transitioning TSE’s Board Screen from a compressed display to a non-compressed display (i.e., the claimed “*adjusting*”), the “*number of the plurality of locations changes according to adjusting the first plurality of price levels.*” For example, as shown in the figure on 0068 of TSE, the number of levels changes from three to seven when the “*first plurality of price levels*” is adjusted to the “*adjusted plurality of price levels.*” (TSE, p. 0068.) Thus, TSE discloses the “*displaying a bid and ask display region*” step. (Roman Decl., ¶104.)

Pet. 51–52; *see also* Pet. Reply 15–23 (discussing price levels and corresponding locations on TSE’s compressed display). As can be seen from the above, Petitioner relies upon locations in the bid and ask region of TSE’s compressed display to teach the claimed plurality of locations. Claim 1 requires that the plurality of locations correspond to *the first plurality of price levels displayed along the static price axis*. Ex. 1001, 34:35–37. In annotated Figure C, the first plurality of price levels are displayed along the price axis of the compressed display.

Patent Owner disputes that the price axis of the compressed display is static. PO Resp. 54–55, 59–60. In particular, Patent Owner argues that “in the compressed mode, there is no ‘static price axis’” because “when new orders are added at price levels that did not previously have any order (or when the market changes to remove previous orders from a price), the price levels change positions based on these market changes.” *Id.* (citing Ex. 2331, 34:17–37:5; Ex. 2169 ¶ 91).

Patent Owner's argument is persuasive. TSE discloses that in compressed mode, only prices that satisfy certain conditions, such as having an order, are displayed. *Id.* at 68. For example, as can be seen in the figure on page 68 of TSE, reproduced above, only prices 002, 004, and 007 are displayed in the compressed display. During cross-examination, Petitioner's declarant Mr. Rho indicated that under certain circumstances the prices would move relative to each other when TSE's Board/Screen was in compressed mode.

Q. Okay. All right. So in this compressed mode figure that we've been looking at on page 12 of your declaration, there are prices shown at 002, 004, and 007, correct?

A. There are prices at 002, 004 and 007. That is correct.

....

Q. Okay. Well, let's assume 006 is added but the center price is still 004. In that scenario, 006 would be added between 004 and 007, 007 would move up, and 004 would stay in the same place, correct?

....

THE WITNESS: That seems correct, yes.

Ex. 233134:20–37:5.

Mr. Rho's testimony indicates that the price axis of the compressed screen is not a static price axis. The broadest reasonable interpretation in light of the specification of the '055 patent of static price axis is a price column or reference line where prices do not nor-

mally change positions unless a re-centering or re-positioning command is received. As Mr. Rho testified, certain price levels of TSE's compressed mode price axis change positions relative to each other in certain circumstances when a re-centering or re-positioning command is not received. For example, on TSE's compressed display shown in the figure on page 68, reproduced above, price 007 would move up relative to price 004 when an order at price 006 was added, but the center price is still 004. We, thus, are persuaded by Patent Owner that Petitioner has failed to establish that TSE discloses a bid and ask display region comprising a plurality of locations corresponding to the first plurality of price levels displayed along the static price axis, as required by claims 1 and 17.

Petitioner argues that TSE's price axis in compressed mode is static because TSE discloses the price levels do not change positions in compressed, scrolling mode unless the user selects the home button to return the price axis to a designated position and because TSE allows for one-half the length of the price axis to be the designated number for causing the price axis to reposition every time the designated price leaves the center. Pet. 49–50, Pet. Reply 17–20. Petitioner's argument is unpersuasive because it does not address Mr. Rho's testimony, reproduced above. Petitioner fails to explain sufficiently why the price axis of TSE's compressed mode is a static price axis if price levels can change positions relative to each other under certain circumstances when a re-centering or re-positioning command is not received.

In the Petitioner's Reply, Petitioner contends that even if the Board accepts Patent Owner's arguments,

transitioning TSE's display from boardx4 mode to boardx2 mode satisfies the disputed claim limitations. Pet. Reply 20, 23–25. Petitioner's Reply raises a new issue and exceeds the proper scope of a reply.⁸ Although the Petition discusses TSE's boardx4 mode and boardx2 mode in its overview of TSE (Pet. 35–40) and in connection with other claim limitations (*Id.* at 57), the Petition does not rely upon transitioning TSE's display from boardx4 mode to boardx2 mode to satisfy the disputed limitations above (*see Id.* at 45–52). Petitioner proffers a second Declaration of David Rho to support its argument made in its Reply. Like the Petition, the testimony of Mr. Rho in his second Declaration discusses how transitioning TSE's display from boardx4 mode to boardx2 mode satisfies the disputed claim limitations. Ex. 1035 ¶¶ 23–25. As provided in 37 C.F.R. § 42.23(b), a “reply may only respond to arguments raised in the corresponding opposition...or patent owner response.” One indication that a new issue has been raised in a reply is where a petitioner submits “new evidence necessary to make out a prima facie case” of unpatentability of an original claim. Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,767 (Aug. 14, 2012). An argument that raises a new issue will not be considered. *Id.* We, thus, will not consider Petitioner's contention that transitioning TSE's display from boardx4 mode to boardx2 mode

⁸ During trial, Patent Owner objected to Petitioner's Reply as raising new issues for the first time. *See* Paper 64, Ex. 3006. In response, we authorized Patent Owner to file a listing identifying the portions of the Reply that allegedly raise new arguments and authorized Petitioner to file a listing identifying where the alleged new arguments were first raised in the record. *See* Papers 44, 45. We have taken into consideration the listings.

satisfies the disputed claim limitations raised for the first time in Petitioner's Reply.

For the reasons given above, we determine that Petitioner fails to show by a preponderance of the evidence that claims 1 and 17 of the '055 patent are unpatentable under 35 U.S.C. § 103 over TSE.

c. Dependent Claims 3, 4, 6–15, 18, and 19

Claims 3, 4, 6–15, 18, and 19 depend from claims 1 and 17. For the same reasons as discussed above with regards to the patentability of claims 1 and 17 over TSE, we determine the Petitioner fails to show by a preponderance of the evidence that claims 3, 4, 6–15, 18, and 19 are unpatentable over TSE.

ii. Obviousness of Dependent Claims 2 and 5 over TSE and Gutterman and Obviousness of Dependent Claim 16 over TSE and Belden

Claims 2, 5, and 16 depend from claim 1. For the same reasons as discussed above with regards to the patentability of claim 1 over TSE, we determine the Petitioner fails to show by a preponderance of the evidence that claims 2, 5, and 16 are unpatentable over TSE. Petitioner does not rely upon Gutterman or Belden to cure the deficiency of TSE discussed above.

III. MOTIONS TO EXCLUDE

A. Patent Owner's Motion to Exclude

Patent Owner moves to exclude Exhibits 1007, 1008, and 1011. PO Mot. to Exclude 1–2. Exhibit 1007 is TSE, and Exhibit 1008 is the English language translation of TSE. Petitioner relies on Exhibits 1007 and 1008 to establish unpatentability of the challenged claims under 35 U.S.C. § 103. Patent Owner

objects to these documents for lack of authenticity and/or for inadmissible hearsay. *Id.* We find it unnecessary to consider the specific objection to the admissibility of Exhibits 1007 and 1008, because Petitioner's arguments regarding patentability are not persuasive for the reasons provided above, even assuming Exhibits 1007, 1008, and 1011 to be admissible.

Ex. 1011 is the transcript of Mr. Kawashima's deposition concerning the prior art status of TSE. Petitioner relies on Exhibit 1011 to establish the prior art status of TSE. Patent Owner objects to this document for lack of authenticity and/or for inadmissible hearsay. PO Mot. to Exclude 1–2. We find it unnecessary to consider the specific objection to the admissibility of Exhibit 1011, because it was not necessary for use to determine the prior art status of TSE for the reasons provided above, even assuming Exhibits 1007, 1008, and 1011 to be admissible.

In addition, Patent Owner also moves to exclude portions of Petitioner's Reply, portions of a second Declaration of David Rho (Ex. 1035), and portions of the testimony of Dr. Olsen (Ex. 1038). *Id.* at 6. Patent Owner objects to these documents as being outside the scope of reply or direct questioning and/or unfairly prejudicial. PO Mot. to Exclude 6–12. Petitioner relies on the objected to portions of the second Declaration of David Rho and Petitioner's Reply to support its arguments that transitioning TSE's display from boardx4 mode to boardx2 mode satisfies the disputed claim limitations. Pet. Reply 20, 23–25. As explained above, we did not consider the specific arguments and portions of Exhibit 1035. Patent Owner's argument,

thus, is moot. Petitioner relies upon the objected to testimony of Dr. Olsen to argue that TSE discloses a static price axis in compressed, non-scrolling mode. *Id.* at 18. We find it unnecessary to consider the specific objections to the admissibility of portions of Ex. 1038, because Petitioner’s arguments concerning the unpatentability of the claims over TSE are unpersuasive, even assuming the objected to portions of Ex. 1038 is admissible.

Accordingly, we *dismiss* Patent Owner’s Motion to Exclude as moot.

B. Petitioner’s Motion to Exclude

Petitioner moves to exclude Exhibits 2030, 2032, 2168, 2292–2296, 2334, and 2339 and to exclude ¶¶ 127–128 of Exhibit 2169 because the “documents are irrelevant and/or constitute hearsay to which no exception applies.” Pet. Mot. to Exclude 1.

Exhibits 2030 and 2032 are a jury verdict and docket entry, respectively, associated with an earlier district court case involving Patent Owner and a third party. Although Patent Owner relies on Exhibit 2030 in its Response, we do not find where it relies on Exhibit 2032. In any event, we understand Patent Owner to rely on at least Exhibit 2030 in support of its arguments that TSE is not prior art. PO Resp. 48, n. 8. Petitioner moves to exclude the exhibits as irrelevant and inadmissible. Pet. Mot. to Exclude 3–4. We find it unnecessary to consider the specific objections to the admissibility of Exhibits 2030 and 2032, because it was not necessary for us to determine the prior art status of TSE for the reasons provided above.

Exhibit 2168 is a Declaration of Eric Gould-Bear. Patent Owner relies upon the testimony of Mr. Gould-Bear to support its argument that the '055 patent is not eligible for covered business method patent review and that the '055 patent is eligible. PO Resp. 24, 27, 29, 30, 32, 32. Petitioner objects to Ex. 2168 for lack of relevance. Pet. Mot. to Exclude 4–5. We find it unnecessary to consider the specific objection to the admissibility of Ex. 2168, because Patent Owner's arguments regarding the eligibility of the '055 patent are not persuasive for the reasons provided above, even assuming Exhibit 2168 to be admissible.

Exhibit 2169 is a Declaration of Christopher Thomas. Exhibits 2292–2296 are transcripts from a related district court proceeding. Patent Owner's declarant Mr. Thomas relies upon Exhibits 2292–2296 to support his testimony regarding the technical nature of the '055 patent. *See* Ex. 2169 ¶¶ 127–128. Petitioner objects to the Exhibits for lack of relevance and impermissible hearsay. Pet. Mot. to Exclude 7–8. Petitioner objects to ¶¶ 127–128 of Exhibit 2169 for containing impermissible hearsay and improper expert testimony because Mr. Thomas relies upon Exhibits 2292–2296. *Id.* at 5-6. We find it unnecessary to consider the specific objection to the admissibility of ¶¶ 127–128 of Exhibit 2169 and Exhibits 2292–2296, because Patent Owner's arguments regarding the technical nature of the '055 patent are not persuasive for the reasons provided above, even assuming ¶¶ 127–128 of Exhibit 2169 and Exhibits 2292–2296 to be admissible.

Exhibits 2334 and 2339 are both a Declaration of Harold Abilock. Patent Owner relies upon Exhibits

2334 and 2339 and argues that the challenged claims are patentable over TSE. PO Resp. 61–63, 67–68, 78. Petitioner objects to these declarations for lack of relevance. Pet. Mot. to Exclude 8–9. We find it unnecessary to consider the specific objection to the admissibility of Exhibits 2334 and 2339, because Petitioner’s arguments regarding patentability are not persuasive for the reasons provided above, even assuming Exhibits 2334 and 2339 to be admissible.

Accordingly, we *dismiss* Petitioner’s Motion to Exclude as moot.

IV. CONCLUSION

For the foregoing reasons, we determine that Petitioner shows, by a preponderance of the evidence, that claims 1–19 of the ’055 patent are patent-ineligible under 35 U.S.C. § 101. Petitioner fails to show, by a preponderance of the evidence, that claims 1–19 of the ’055 patent are unpatentable under 35 U.S.C. § 103.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–19 of the ’055 patent are patent-ineligible under 35 U.S.C. § 101;

FURTHER ORDERED that Patent Owner’s Motion to Exclude Evidence is *dismissed*;

FURTHER ORDERED that Petitioner’s Motion to Exclude Evidence is *dismissed*; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2

App. 66

UNITED STATES PATENT AND
TRADEMARK OFFICE

BEFORE THE PATENT TRIAL
AND APPEAL BOARD

IBG LLC,
INTERACTIVE BROKERS LLC,
TRADESTATION GROUP, INC., and
TRADESTATION SECURITIES, INC.,
Petitioner,
v.

TRADING TECHNOLOGIES INTERNATIONAL,
INC.,
Patent Owner.

Case CBM2016-00054
Patent 7,693,768 B2

Before SALLY C. MEDLEY, MEREDITH C. PETRA-
VICK, and JEREMY M. PLENZLER, *Administrative
Patent Judges*.

PETRAVICK, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Covered Business Method Patent Review
35 U.S.C. § 328(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. Background

IBG LLC, Interactive Brokers, LLC, TradeStation Group, Inc., and TradeStation Securities, Inc. (collectively, “Petitioner”), filed a Petition requesting covered business method (“CBM”) patent review of claims 1–23 (the “challenged claims”) of U.S. Patent No. 7,693,768 B2 (Ex. 1001, “the ’768 patent”). Paper 4 (“Pet.”). Petitioner challenges the patentability of claims (“the challenged claims”) of the ’768 patent under 35 U.S.C. § 101 and § 103.

On October 18, 2016, we instituted a CBM patent review on the following grounds:

References	Basis	Claims Challenged
N/A	§ 101	1–23
TSE ¹ and Belden ²	§ 103	1–13, 15, 16, 18, and 21–23
TSE, Belden, and Cooper ³	§ 103	14, 17, 19, and 20

Paper 10 (“Institution Decision” or “Inst. Dec.”).

Thereafter, Trading Technologies International, Inc. (“Patent Owner”) filed a Patent Owner’s Response on January 1, 2017 (Paper 21, “PO. Resp.”)

¹ Tokyo Stock Exchange Operation System Division, Futures/Option Purchasing System Trading Terminal Operation Guide (1998) (Ex. 1016). Citations to this reference refer to its English translation (Ex. 1017).

² PCT Pub. No. WO 90/11571, pub. Oct. 4, 1990 (Ex. 1012, “Belden”).

³ Alan Cooper, *About Face: The Essentials of User Interface Design* (1995) (Ex. 1022).

and Petitioner filed a Reply (Paper 40, “Pet. Reply”) to Patent Owner’s Response.

Patent Owner filed a Motion for Observations (Paper 52, “PO Mot. for Observations”) and Petitioner filed a Response (Paper 54) to Patent Owner’s Motion for Observations.

Petitioner filed a Motion to Exclude (Paper 44, “Pet. MTE”) and Patent Owner filed an Opposition (Paper 52) to Patent Owner’s Motion. Petitioner filed a Reply (Paper 53) in support of its Motion.

Patent Owner filed a Motion to Exclude (Paper 48, “PO MTE”) and Petitioner filed an Opposition (Paper 50, “PO MTE Opp.”) to Patent Owner’s Motion. Patent Owner filed a Reply (Paper 54, “PO MTE Reply”) in support of its Motion.

An oral hearing was held on June 23, 2017. Paper 58 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 328(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–23 of the ’768 patent are unpatentable.

B. Related Proceedings

The parties indicate that the ’768 patent is the subject of numerous related U.S. district court proceedings. Pet. 2; Paper 6, 1–5.

The application that issued as the ’768 patent ultimately claims, under 35 U.S.C. § 320, the benefit of application 09/590,692, that issued as the ’132 patent.

The '132 patent was the subject of *Technologies International, Inc. v. CQG, Inc.*, 675 Fed. Appx. 1001 (Fed. Cir. 2017) (“CQG”). The Federal Circuit determined that the claims of the '132 patent are patent eligible under 35 U.S.C. § 101.

U.S. Patent No. 6,772,132 (“the '132 patent”) was also the subject of petitions for CBM patent review in *TD Ameritrade Holding Corp. v. Trading Technologies International, Inc.*, CBM2014-00135 (PTAB), *CQG, Inc. v. Trading Technologies International, Inc.*, CBM2015-00058 (PTAB), and *IBG LLC v. Trading Technologies International, Inc.*, CBM2015-00182 (PTAB). Trial was instituted, but later terminated due to settlement, for CBM2014-00135. Institution was denied for CBM2015-00058. Institution was granted for CBM2015-00182, and a final written decision issued on February 28, 2017.

Numerous other patents are related to the '768 patent and the related patents are or were the subject of numerous petitions for CBM patent review and reexamination proceedings. Pet. 2; Paper 6, 5–7; Paper 8, 1.

C. The '768 Patent

The '768 patent is titled “Click Based Trading with Intuitive Grid Display of Market Depth” and issued on April 6, 2010. Ex. 1001, (45), (54). The invention of the '768 patent “is directed to the electronic trading of commodities.” *Id.* at 1:16–17. The '768 patent discloses a graphical user interface (“GUT”), named the Mercury display, and a method of using the Mercury display to displaying market information and placing

trade orders for a commodity on an electronic exchange. *Id.* at 1:17–22, 3:5.

Before turning to a discussion of the Mercury display, a discussion of a conventional method of trading using a GUI is helpful. Figure 2 of the '768 patent is reproduced below.

FIG. 2

	Contract	Depth	BidQty	BidPrc	AskPrc	AskQty	LastPrc	LastQty	Total
1	CDHO	•	785	7626	7627	21	7627	489	8230
2			626	7625	7629	815			
3			500	7624	7630	600			
4			500	7623	7631	2456			
5			200	7622	7632	800			

Figure 2 of the '768 patent depicts a common GUI (“the Fig. 2 GUI”) that displays market information and is used to place trade orders for a commodity on an electronic exchange. *Id.* at 5:8–12, Fig. 2; *see also* PO Resp. 6–7 (describing the Fig. 2 GUI as “widely used”); Ex. 1018 ¶ 21 (describing the Fig. 3 GUI as a common dynamic screen); Ex. 2169 ¶¶ 61–62, 69 (describing the Fig. 2 GUI as “ubiquitous by the time of the invention” and “prevalent”). As can be seen from the above, the Fig. 2 GUI’s screen has a grid having columns and rows. Row 1 shows the inside market. Ex. 1001, 5:14–16. The inside market is the highest bid price and the lowest ask price. *Id.* at 4:56–58. Rows 2–5 show the market depth, which are other bids or asks in the market. *Id.* at 4:52–56, 5:16–20. The market information updates dynamically as the market updates. *Id.* at 5:23–25. The inside market,

however, is always displayed in row 1, a fixed location. Ex. 2169 ¶ 54.

Other prior art GUIs, similar to the Fig. 2 GUI, arrange the market information in the grid differently. Patent Owner's declarant Christopher Thomas testifies that similar dynamic GUIs "displayed the locations for the best bid and ask prices such that the prices were displayed vertically (e.g., with the location for the best ask price being displayed above the location for the best bid price)." Ex. 2169 ¶ 60.

In the Fig. 2 GUI, "the user could place an order by clicking on a location (e.g., a cell) in one of the price or quantity columns." Ex. 2169 ¶¶ 58–59. Patent Owner's declarant Christopher Thomas testifies that "[s]ome of such dynamic screens permitted single action order entry that consisted of a trader pre-setting a default quantity and then click (e.g., using a single-click or a double-click) on a dynamic screen to cause a trade order to be sent to the exchange at the pre-set quantity." Ex. 1008 ¶ 20; *see* Ex. 1031, 7.

Other types of conventional trading GUIs used order entry tickets to send trade orders to an electronic exchange. Ex. 2169 ¶ 50. An order entry ticket is "in the form of a window, with areas for a trader to fill out order parameters for an order, such as the price, quantity, an identification of the item being traded, buy or sell, etc." *Id.*; *see also* Ex. 1001, 2:21–23, 34–36 (describing a trader manually entering trade order parameters).

Figure 3 of the '768 is reproduced below.

FIG. 3

		10:48:44	BidQ	AskQ	Pric	LTQ
1009	E/W					
	L	3		104	99	
1010	R	5		24	88	
1011		720		33	97	
1012	X	10		115	96	
1013		0				
				32	95	
1014		10 1H		27	94	
		50 3H				
	S O W 24	1K 5H		83	93	
1007	S O W 7	CLR		45	92	
1015	X	10		28	91	
1016		17		20	90	10
	B O W 15	CXL	18		89	
1008	B O W 13	+ -	97		88	
1017		NET 0	30		87	
1018	B O W 17	NET REAL	43		86	
			110		85	
1019			23		84	
			31		83	
1021			125		82	
			21		81	

Figure 3 of the '768 patent illustrates an example of the Mercury display with example values for trading a commodity including prices, bid and ask quantities relative to price, and trade quantities. Ex. 1001, 3:41-42, 7:1-3.

The Mercury display is similar to the Fig. 2 GUI in that both display market information in a grid having rows and column and both provide for single action order entry. *See id.* at 6:59-64, 7:32-33, 4:8-18, 9:1-54, Fig. 6, steps 1306-1315. The Mercury display

differs from the Fig. 2 GUI in the arrangement of the market information in the grid. In the Mercury display, price values for the commodity are displayed in a price column 1005 (i.e., a price axis). *Id.* The '768 patent explains that the price column does not display whole prices but rather representative ticks. *Id.* at 7:33–36. The values in the price column of the Mercury display “are static; that is, they do not normally change positions unless a re-centering command is received.” *Id.* at 7:42–44. Bid and ask quantities are displayed in columns 1003 and 1004, respectively, and are aligned with the corresponding price value in price column 1005. *See id.* at 7:27–33. The bid quantities and ask quantities move up and down as the market changes, and, thus, the location of the inside market moves up and down. *See id.* at 8:33–43.

Although Figure 3 of the '768 patent displays the market depth, the '768 patent discloses that:

How far into the market depth the present invention can display depends on how much of the market depth the exchange provides. Some exchanges supply an infinite market depth, while others provide no market depth or only a few orders away from the inside market. The user of the present invention can also cho[ose] how far into the market depth to display on his screen.

Id. at 5:1–7. The '768 patent, thus, indicates that in some instances the screen will display only the inside market (i.e., the highest bid price and the lowest ask price) and not the market depth.

The Mercury display may also display other information. Column 1002 contains various parameters and information used to execute trades, such as the default quantity displayed in cell 1016. *See id.* at 7:65–8:32. The number next to the W in cell 1007 indicates the trader’s orders that are in the market and not yet filled. *Id.* at 7:53–58.

D. Illustrative Claim

Claims 1 and 23 are independent. Claim 1 is illustrative of the claimed subject matter and is reproduced below:

1. A method of placing a trade order for a commodity on an electronic exchange using a graphical user interface and a user input device, said method comprising:

receiving data relating to the commodity from the electronic exchange, the data comprising an inside market with a highest bid price and a lowest ask price currently available for the commodity;

dynamically displaying via a computing device a first indicator in one of a plurality of areas in a bid display region, each area in the bid display region corresponding to a price level along a price axis, the first indicator representing a quantity associated with at least one order to buy the commodity at the highest bid price;

dynamically displaying via the computing device a second indicator in one of a plurality of areas in an ask display region, each area in the ask display region corresponding to a price level

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along the price axis, the second indicator representing a quantity associated with at least one order to sell the commodity at the lowest ask price;

displaying an order entry region comprising a plurality of locations for receiving single action commands to send trade orders, the plurality of location including:

(a) at least one first fixed location corresponding to a first price level along the price axis associated with the highest bid price currently available in the market, wherein upon receipt of new data representing an updated highest bid price currently available for the commodity, the at least one first fixed location continues to correspond to the first price level even if the first price level is no longer associated with the highest bid price currently available in the market; and

(b) at least one second fixed location corresponding to a second price level along the price axis associated with the lowest ask price currently available in the market, wherein upon receipt of new data representing an updated lowest ask price currently available for the commodity, the at least one second fixed location continues to correspond to the second price level even if the second price level is no longer associated with the lowest ask price currently available in the market;

updating the display of the first indicator such that the first indicator is moved relative to the

price axis to a different area in the bid display region corresponding with a different price level along the price axis in response to receipt of new data representing an updated highest bid price currently available for the commodity; updating the display of the second indicator such that the second indicator is moved relative to the price axis to a different area in the ask display region corresponding with a different price level along the price axis in response to receipt of new data representing an updated lowest ask price currently available for the commodity; and

setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange in response to a selection of a particular location of the order entry region by a single action of a user input device.

Ex. 1001, 11:46–12:36.

II. ANALYSIS

A. Claim Construction

In a covered business method patent review, claim terms are given their broadest reasonable interpretation in light of the specification in which they appear and the understanding of others skilled in the relevant art. *See* 37 C.F.R. § 42.300(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). Applying that standard, claim terms are presumed to have their ordinary and cus-

tomary meaning as would be understood by one of ordinary skill in the art in the context of the patent's specification. See *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

1. “single action”

Claims 1 and 23 both recite “a selection of a particular location of the order entry region by a single action of a user input device.” Ex. 1001, 12:34–36, 14:55–57.

Petitioner contends that “single action” should be construed to be “any action by a user within a short period of time, whether comprising one or more clicks of a mouse button or other input device” as defined in the specification of the '768 patent. Pet. 14 (quoting Ex. 1001, 4:14–18).

Patent Owner states that Petitioner's proposed construction “is sufficient for these proceedings so long as the construction is limited to ‘an action by a user...’ or ‘one action by a user...’ because the claim itself specifically identifies that the action be a ‘single’ action.” PO Resp. 10 (emphasis omitted). Patent Owner argues that any other construction would not be reasonable because it would be contrary to the specification and the plain and ordinary meaning. *Id.*

A patentee may rebut the presumption that claim terms have ordinary and customary meaning by providing a definition of the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). As Petitioner points out, the '768 patent provides such a definition. Pet. 14. The specification of the '768 patent states:

the specification refers to a single click of a mouse as a means for user input and interaction with the terminal display as an example of a single action of the user. While thus describes a preferred mode of interaction, the scope of the present invention is not limited to the use of a mouse as the input device or to the click of a mouse button as the user's single action. *Rather, any action by a user within a short period of time, whether comprising one or more clicks of a mouse button or other input device, is considered a single action of the user for the purposes of the present invention.*

Ex. 1001, 4:8–18 (emphasis added). As can be seen from the above, the '768 patent defines “single action,” with reasonable clarity, deliberateness, and precision, as “any action by a user within a short period of time, whether comprising one or more click of a mouse button or other input device.” *Id.* We, thus, construe “single action” according to its definition in the '768 patent. *In re Paulsen*, 30 F.3d at 1480.

Patent Owner's proposed construction is inconsistent with the definition in the '768 patent. The definition explicitly states that more than one click of a mouse button by a user is considered a “single action” for the purposes of the present invention. Ex. 1001, 4:8–18. Further, dependent claim 9 similarly shows that “single action” should not be limited to one action by a user, as it recites that the “single action...consists of a double click of the user input device” (Ex. 1001, 12:66–13:8).

For the reasons given above, we construe “single action” to mean “any action by a user within a short

period of time, whether comprising one or more clicks of a mouse button or other input device” (Ex. 1001, 4:14–18).

2. *Entered Order Indicator*

Claim 6 recites “an entered order indicator” and “the entered order indicator represents an order pending at the electronic exchange.” Ex. 1001, 12:56–60. Patent Owner argues that “[a person of ordinary skill in the art] would readily recognize that the entered order indicator must indicate to the user that the user has an order at a particular price level along the price axis” because the specification of the ’768 patent discloses “an entered/working’ column (E/W) that ‘displays the current status of the trader’s order.’” PO Resp. 13 (citing Ex. 1001, 7:50–58, Figs. 3–4; Ex. 2169 ¶ 30).

As Petitioner points out, Patent Owner’s argument is inconsistent with the plain language of claim 6, which explicitly states that an “entered order indicator represents an order pending at the electronic exchange.” Pet. Reply 2. The plain language does not require the entered order indicator to indicate to the user that the user has an order at a particular price level along the price axis. Patent Owner’s construction is an attempt to read a limitation from the specification of the ’768 patent into the claims. If a feature is not necessary to give meaning to what the inventor means by a claim term, it would be “extraneous” and should not be read into the claim. *Renishaw PLC v. Marposs Societa’ Per Azioni*, 158 F.3d 1243, 1249; *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433 (Fed. Cir. 1988).

The plain language of claim 6 state that an “entered order indicator represents an order pending at the electronic exchange.” No further construction is required.

3. Other Terms

Patent Owner proposes explicit constructions for other claim terms. *See* PO Resp. 1–4. We do not need to explicitly construe these other claim terms in order to resolve the issues before us. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (Only terms which are in controversy need to be construed, and then only to the extent necessary to resolve the controversy.)

B. Covered Business Method Patent

1. Standing

Section 18 of the AIA⁴ provides for the creation of a transitional program for reviewing covered business method patents. Section 18 limits review to persons or their privies who have been sued or charged with infringement of a “covered business method patent,” which does not include patents for “technological inventions.” AIA § 18(a)(1)(B), (d)(1); *see* 37 C.F.R. § 42.302. Petitioner certifies that it was sued for infringement of the ’768 patent. Pet. 3 (citing Exs. 1003, 1004). Patent Owner does not dispute this. *See generally* PO Resp.

2. Whether the ’768 Patent is a CBM Patent

Under § 18(a)(1)(E) of the AIA, we may institute a transitional review proceeding only for a CBM patent.

⁴ Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284, 329 (2011) (“AIA”).

A CBM patent is a patent that “claims a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service, except that the term does not include patents for technological inventions.” AIA § 18(d)(1); *see also* 37 C.F.R. § 42.301 (defining “[c]overed business method patent” and “[t]echnological invention”). To determine whether a patent is eligible for a covered business method patent review, the focus is on the claims. *Secure Access, LLC v. PNC Bank N.A.*, 848 F.3d 1370, 1379 (Fed. Cir. 2017) (“It is the claims, in the traditional patent law sense, properly understood in light of the written description, that identifies a CBM patent.”). One claim directed to a CBM is sufficient to render the patent eligible for CBM patent review. *See id.* at 1381 (“[T]he statutory definition of a CBM patent requires that the patent have a claim that contains, however phrased, a financial activity element.”).

In our Institution Decision, we determined that the Petitioner had shown that the ’768 patent is a CBM patent. Inst. Dec. 9–12. Patent Owner urges us to reconsider our determination and find that the ’768 patent is not eligible for CBM review. *See* PO Resp. 63–65. We, however, are not apprised of any sufficient reason to change our original determination.

a. “Method or Corresponding Apparatus for Performing Data Processing or Other Operations Used in the Practice, Administration or Management of a Financial Product or Service”

The statute defines a “covered business method patent” as “[a] patent that claims a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service.” AIA § 18(d)(1); *see* 37 C.F.R. § 42.301(a). A covered business method patent can be broadly interpreted to encompass patents claiming activities that are financial in nature. Transitional Program for Covered Business Method Patents—Definitions of Covered Business Method Patent and Technological Invention, 77 Fed. Reg. 48734, 48735 (Aug. 14, 2012); *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1338–41 (Fed. Cir. 2016) (determining that a patent was a covered business method patent because it claimed activities that are financial in nature); *Unwired Planet, LLC v. Google, Inc.*, 841 F.3d 1376, n. 5 (Fed. Cir. 2016) (stating that “we endorsed the ‘financial in nature’ portion of the standard as consistent with the statutory definition of ‘covered business method patent’ in *Blue Calypso*”), *Versata Development Group, Inc. v. SAP America, Inc.*, 793 F.3d 1306, 1324–25 (Fed. Cir. 2015) (“[The statute] on its face covers a wide range of finance-related activities.”).

A patent need have only one claim directed to a covered business method to be eligible for review. 77 Fed. Reg. at 48,736 (Response to Comment 8). We take claim 1 as representative.

Petitioner asserts that claim 1 is directed to a covered business method because it recites a method of placing a trade order for a commodity on an electronic exchange including the steps of displaying market information and sending a trade order, which are financial in nature. Pet. 4–5. As Petitioner points out, claim 1 recites displaying market information, including indicators of a highest bid and a lowest ask in the market, and sending a trade order to an electronic trading exchange. Pet. 4; Ex. 1001, 11:46–12:34.

Displaying market information and sending a trade order to an electronic exchange are activities that are financial in nature. A method for placing a trade order for a commodity on an electronic exchange is a method for performing data processing or other operations used in the practice, administration, or management of a financial product or service.

Patent Owner does not dispute that the '768 patent claims a method used for a financial product or service, but does dispute that the '768 patent claims data processing. PO Resp. 90–91. Patent Owner's argument is based upon the assumption that "data processing" in the statute is interpreted according to the definition of "data processing" found in the glossary for class 705 of the United States Patent Classification System. *See id.* Patent Owner, however, does not sufficiently explain why this definition is controlling, as opposed to the plain meaning of "data processing." We, thus, are not persuaded that "data processing" as recited by the statute precludes data processing for the purpose of displaying the data. The '768 patent discloses processing market information for display on a client terminal and for sending an order to an

exchange. *See e.g.*, Ex. 1001, 4:60–61 (“The present invention processes this information and maps it through simple algorithms and mapping tables to positions in a theoretical grid program...”). We, thus, are not persuaded that the ’768 patent does not claim “performing data processing...used in the practice, administration, or management of a financial product or service” (AIA § 18(d)(1)).

In any event, the statute does not limit CBM patents to only those that claim methods for performing data processing used in the practice, administration, or management of a financial product or service. It includes methods for performing “other operations” used in the practice, administration, or management of a financial product or service. The statute states that the “other operations” are those that are “used in the practice, administration, or management of a financial product or financial service.” AIA § 18(d)(1). There appears to be no disagreement that the claimed method steps are operations used in the practice, administration, or management of a commodity or trading a commodity on an electronic exchange, e.g., a financial service. *See generally* PO Resp. 90–91. The ’768 patent, therefore, at least claims “other operations used in the practice, administration, or management of a financial product or financial service” (AIA § 18(d)(1)).

Patent Owner contends that the Legislative History confirms that the claimed invention is not a covered business method because “it specifically states that GUI tools for trading are not the types of inventions that fall within CBM jurisdiction.” PO Resp. 92 (citing Ex. 2126, S5428, S5433).

Although the legislative history includes certain statements that certain novel software tools and graphical user interfaces that are used by the electronic trading industry worker are not the target of § 18 of the AIA (*see* Ex. 2126, S5428, S5433), the language of the AIA, as passed, does not include an exemption for user interfaces for commodities trading from covered business method patent review. Indeed, “the legislative debate concerning the scope of a CBM review includes statements from more than a single senator. It includes inconsistent views....” *Unwired Planet*, 841 F.3d at 1381. For example, in contrast to the statements cited by Patent Owner, the legislative history also indicates that “selling and trading financial instruments and other securities” is intended to be within the scope of covered business method patent review. *See* Ex. 2126, S5432 (statements of Sen. Schumer); *see also id.* at S54636–37 (statements of Sen. Schumer expressing concern about patents claiming “double click”), 157 Cong. Rec. S1360 at S1364 (Mar. 8, 2011) (statements of Sen. Schumer explain that “method or corresponding apparatus” encompasses “graphical user interface claims” and “sets of instructions on storage media claims.”) “[T]he legislative history cannot supplant the statutory definition actually adopted.... The authoritative statement of the Board’s authority to conduct a CBM review is the text of the statute.” *Unwired Planet*, 841 F.3d at 1381. Each claimed invention has to be evaluated individually to determine if it is eligible for a CBM patent review. A determination of whether a patent is eligible for a CBM patent review under the statute is made on a case-by-case basis. 37 C.F.R. § 42.301(b).

For the reasons stated above, we are persuaded by Petitioner that the '768 patent “claims a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service” and meets that requirement of § 18(d)(1) of the AIA.

3. Exclusion for Technological Inventions

Even if a patent includes claims that would otherwise be eligible for treatment as a covered business method, review of the patent is precluded if the claims cover only “technological invention[s],” as defined by 37 C.F.R. §42.301(b). The definition of “covered business method patent” in § 18(d)(1) of the AIA does not include patents for “technological inventions.” To determine whether a patent is for a technological invention, we consider the following: “whether the claimed subject matter as a whole [(1)] recites a technological feature that is novel and unobvious over the prior art; and [(2)] solves a technical problem using a technical solution.” 37 C.F.R. § 42.301(b). Both prongs must be satisfied in order for the patent to be excluded as a technological invention. *See Versata*, 793 F.3d at 1326–7; *Apple Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1240 (Fed. Cir. 2016). The following claim drafting techniques, for example, typically do not render a patent a “technological invention”:

- (a) Mere recitation of known technologies, such as computer hardware, communication or computer networks, software, memory, computer-readable storage medium, scanners, display devices or databases, or specialized machines, such as an ATM or point of sale device.

(b) Reciting the use of known prior art technology to accomplish a process or method, even if that process or method is novel and non-obvious.

(c) Combining prior art structures to achieve the normal, expected, or predictable result of that combination.

Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,763–64 (Aug. 14, 2012). The Federal Circuit has held that a claim does not include a “technological feature” if its “elements are nothing more than general computer system components used to carry out the claimed process.” *Blue Calypso*, 815 F.3d at 1341; *see also Versata*, 793 F.3d at 1327 (“the presence of a general purpose computer to facilitate operations through uninventive steps does not change the fundamental character of an invention”).

With respect to the first prong, Petitioner contends that rather than reciting a technical feature that is novel or unobvious over the prior art, the claims of the ’768 patent generally recite trading software that is implemented on a conventional computer. Pet. 5–7. When addressing “whether the claimed subject matter as a whole recites a technological feature that is novel and unobvious over the prior art,” Patent Owner alleges that “Petitioners fail to address whether the claims recite a technical feature that is novel and unobvious.” PO Resp. 91. That is incorrect. *See* Pet. 5–7; Inst. Dec. 11 (discussing Petitioner’s contention).

We are persuaded by Petitioner’s contentions that at least claim 1 of the ’768 patent does not recite a

novel and non-obvious technological feature. Pet. 5–7 (citing Ex. 1007 ¶¶ 73–74). The specification of the '768 patent treats as well-known all potentially technological aspects of the claims. For example, the '768 patent discloses that its system can be implemented “on any existing or future terminal or device” (Ex. 1001, 4:4–7), each of which is known to include a display, and discloses that the input device can be a mouse (*id.* at 4:9–11), which is a known input device. The '768 patent further discloses that “[t]he scope of the present invention is not limited by the type of terminal or device used.” *Id.* at 4:7–9. The '768 patent also describes the programming associated with the GUI as insignificant. *See, e.g., id.* at 4:60–66 (explaining that the “present invention processes [price, order, and fill] information and maps it through simple algorithms and mapping tables to positions in a theoretical grid program” and “[t]he physical mapping of such information to a screen grid can be done by any technique known to those skilled in the art”). That at least claim 1 of the '768 patent does not recite a novel and non-obvious technological feature is further illustrated by our comparison of the Fig. 2 GUI to the Mercury display above (*see* Pet. 5) and by our discussion of that claim being unpatentable under § 103 below. Accordingly, we are persuaded that at least claim 1 does not recite a technological feature that is novel and unobvious over the prior art.

With respect to the second prong, Petitioner contends that the claims of the '768 patent do not fall within § 18(d)(1)'s exclusion for “technological inventions” because the '768 patent does not solve a technical problem using a technical solution. Pet. 8–9. Petitioner notes that “[a]ccording to the '768 patent, the

‘problem’ with prior art trading GUIs was that the market price could change before a trader entered a desired order, causing the trader to ‘miss his price.’” *Id.* at 8 (citing Ex. 1001, 2:50–63). Petitioner contends that “the ’768 patent’s solution is not technical” because Patent Owner “simply [] rearrange[d] how known and available market data is displayed on a GUI” and “did not design a more accurate mouse or a computer that responded faster.” *Id.* at 9.

Patent Owner argues that the ’768 patent provides a technical solution to a technical problem. PO Resp. 91–92. Specifically, Patent Owner argues that “the ’768 claims provide a new GUI construction that improves prior GUIs because it address the problem of a user missing their intended price.” *Id.* at 92. Patent Owner points to *CQG* for support. *Id.* at 91–92.

We are persuaded that the ’768 patent does not solve a technical problem with a technical solution. Pet. 8–9. The ’768 patent purports to solve the problem of a user missing an intended price because a price level changed as the user tried to click to send an order at an intended price level in a GUI tool. *See* Ex. 1001, 2:3–62. As written, claim 1 requires the use of only known technology. Given this, we determine that at least claim 1 does not solve a technical problem using a technical solution and at least claim 1 does not satisfy the second prong of 37 C.F.R. § 42.301(b).

The ’768 patent describes the problem it solves as follows:

[A]pproximately 80% [of the total time it takes to place an order] is attributable to the time required for the trader to read the prices displayed and to enter a trade order. The present invention provides a significant advantage during the slowest portion of the trading cycle—while the trader *manually enters his order*...

In existing systems, multiple elements of an order must be entered prior to an order being sent to market, which is time consuming for the trader. Such elements include the commodity symbol, the desired price, the quantity and whether a buy or sell order is desired. The more time a trader takes entering an order, the more likely the price on which he wanted to bid or offer will change or not be available in the market...In such liquid markets, the prices of the commodities fluctuate rapidly. On a trading screen, this results in rapid changes in the price and quantity fields within the market grid. If a trader intend to enter an order at a particular price, but misses the price because the market prices moved before he could enter the order, he may lose hundreds, thousands, even millions of dollars. The faster a trader can trade, the less likely it will be that he will miss his price and the more likely he will make money.

Ex. 1001, 2:35–62 (emphasis added). “The inventors have developed the present invention which overcomes the drawbacks of the existing trading systems and dramatically reduces the time it takes for a trader to place a trade when electronically trading on an exchange.” *Id.* at 2:66–3:2.

As can be seen from the above, a problem disclosed in the '768 patent is the time it takes for a trader to *manually* enter trader orders on a market or exchange that is rapidly changing, so as to make a profit. This is a financial issue or a business problem, not a technical problem. *See* Pet. 5–7. If the market or exchange did not rapidly change, then there would be no need for a trader to enter orders rapidly.

The '768 patent also describes that “the present invention ensure[s] fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuate.” Ex. 1001, 3:5–9. Claim 1, however, does not require displaying the market depth. *See id.* at 11:46–12:36. Claim 1 only requires displaying a first indicator that represents a quantity associated with the highest bid price and a second indicator that represents a quantity associated with the lowest ask price. *Id.* In other words, claim 1 only requires displaying indicators that correspond to the inside market. *See also id.* at 5:1–7 (disclosing displaying on the inside market and not the market depth). The subject matter of claim 1, thus, does not require the alleged technical solution to the problem of ensuring fast and accurate trades.

Patent Owner’s reliance on *CQG* is misplaced. *CQG* addressed the claimed subject matter of the '134 patent and U.S. Patent No. 6,766,304. The decision relied upon a feature not required by claim 1 of the '768 patent—a *static* price axis. *See* Tr. 44–60 (discussing the differences between the claims at issue in

CQG and the claims of the '768 patent); Pet. 30. Although claim 1 of the '768 patent requires a price axis, it does not require the price axis to be static. *See* Ex. 1001, 12:23–13:16. It does not preclude the price axis from changing as the market information updates or preclude a price value associated with the order entry location changing as it is selected. *See* Tr. 44–60.

We are persuaded by Petitioner that at least claim 1 does not recite a technological feature that is novel and unobvious over the prior art and does not solve a technical problem using a technical solution. Accordingly, we determine that the '768 patent is not for a technological invention.

4. Conclusion

In view of the foregoing, we conclude that the '768 patent is a covered business method patent under AIA § 18(d)(1) and is eligible for review using the transitional covered business method patent program.

C. Section 101 Patent-Eligible Subject Matter

Petitioner challenges claims 1–23 as directed to patent-ineligible subject matter under 35 U.S.C. § 101. Pet. 15–31.

Under 35 U.S.C. § 101, we must first identify whether an invention fits within one of the four statutorily provided categories of patent-eligibility: “processes, machines, manufactures, and compositions of matter.” *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 713–14 (Fed. Cir. 2014).

Initially, we note that Petitioner asserts that claim 23 is “broad enough to encompass a transitory, propagating signal that is encoded, which is not eligible

for patenting.” Pet. 31 (citing *In re Nuijten*, 550 F.3d 1346, 1357 (Fed. Cir. 2007); *Ex parte Mewherter*, 107 USPQ2d 1857m 1859–60 (B.P.A.I. 2013) (precedential)). Petitioner explains that the specification neither defines this term nor provides examples. *Id.* at 14. Petitioner argues that addition of the phrase “having program code recorded thereon” to “computer readable medium” does not limit the medium to non-transitory media. Petitioner argues that “record” is defined as “to set down in writing” or “to cause (as sound, visual images, or data) to be registered on something (as a disc or magnetic tape) in reproducible form.” *Id.* at 15 (citing Ex. 1041, Merriam-Webster’s Collegiate Dictionary definition of record). In our Institution Decision, we made an initial determination that the broadest reasonable interpretation of the “computer readable medium” recited in claim 23 is “any medium that participates in providing instruction to a processor for execution and having program code recorded thereon.” Inst. Dec. 8–9.

Patent Owner responds that there is insufficient evidence to support Petitioner’s contention that one skilled in the art would have understood “computer readable medium having program code recorded thereon” to encompass a signal at the time of the invention. PO Resp. 89–90. Patent Owner disputes that the limitation encompasses signals. *Id.* (citing Ex. 2169 ¶ 33, testimony of Mr. Thomas). Patent Owner also argues that *Ex Parte Mewherter* is inapplicable because it addresses the meaning of the term “storage medium” after to 2002 and the effective filing date of the ’768 patent predates 2002. *Id.* at 90.

Petitioner responds to Patent Owner's contentions by simply asserting that "the Board should follow the precedential decision in *Ex Parte Mewherter*." Pet. Reply 11.

Petitioner's response is unhelpful. For example, in its Reply, Petitioner cites no evidence to rebut Patent Owner's contentions regarding how one skilled in the art would have understood "computer readable medium having program code recorded thereon," at the time of the invention and does not respond to Patent Owner's contentions regarding the applicability of *Ex Parte Mewherter*. In fact, Petitioner does not even acknowledge those contentions.

Accordingly, on this record, which is absent any further evidence or meaningful argument from Petitioner, we are not persuaded that at the time of the invention one skilled in the art would have understood "computer readable medium having program code *recorded* thereon" as encompassing transitory, propagating signals.

There is no dispute that the remaining claims fit within one of the four statutorily provided categories of patent-eligibility. Claim 1, for example, is directed to a process.

1. Eligibility

Patent-eligible subject matter is defined in § 101 of the Patent Act, which recites:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor,

subject to the conditions and requirements of this title.

There are, however, three judicially created exceptions to the broad categories of patent-eligible subject matter in § 101: laws of nature, natural phenomena, and abstract ideas. *Alice*, 134 S. Ct. at 2354; *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012). Although an abstract idea, itself, is patent-ineligible, an application of the abstract idea may be patent-eligible. *Alice*, 134 S. Ct. at 2355. Thus, we must consider “the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Id.* (citing *Mayo*, 132 S. Ct. at 1297–98). The claim must contain elements or a combination of elements that are “sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [abstract idea] itself.” *Id.* (citing *Mayo*, 132 S. Ct. at 1294).

Claims 1 and 23 are independent and recite similar limitations. We take claim 1 as representative.

2. Abstract Idea

“The ‘abstract idea’ step of the inquiry calls upon us to look at the ‘focus of the claimed advance over the prior art’ to determine if the claim’s ‘character as a whole’ is directed to excluded subject matter.” *Affinity Labs of Texas v. DirectTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016) (quoting *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016); see also *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016).

According to Petitioner, the claims are directed to the abstract idea of “placing an order based on observed (plotted) market information, as well as updating market information.” Pet. 17. Petitioner contends that “claim 1 could be performed in the human mind or with the aid of pen-and-paper with little difficulty because the claim requires plotting only a few data points” (*id.* at 18) and that the claims are directed to commodity trading which is ‘a fundamental economic practice long prevalent in our system of commerce.’” Pet. Reply 5 (citing *Alice*, 134 S. Ct. at 2356). Patent Owner disagrees. *See* PO Resp. 79–87.

Claim 1 of the ’768 patent recites “a method of placing a trade order for a commodity on an electronic exchange using a graphical user interface and a user input device.” Ex. 1001, 11:46–48. Claim 1 recites steps of displaying market information, bid and ask quantities, in regions along a price axis. *Id.* at 11:53–64. The market information is an indicator of an order to buy at the highest bid price and an indicator of an order to sell at the lowest ask price. *Id.* In other words, the displayed market information is the inside market. Claim 1 does not require displaying the market depth. Claim 1 also recites a step of updating the market information such that it moves relative to the price axis as the market changes. *Id.* at 12:19–31. Claim 1 further recites steps of displaying a first and second fixed location in an order entry region, steps of setting parameters for a trade order, and a step of sending a trade order to an exchange in response to a single action of a user input device *Id.* at 11:65–67, 12:32–36.

As can be seen from its steps, the focus of claim 1 is placing trade orders based on displayed market information, as well as updating the displayed market information. This focus is consistent with the '768 patent's statement that "[t]he present invention is directed to the electronic trading of commodities.... It facilitates the display of and the rapid placement of trade orders...." *Id.* at 1:15–20. The focus of claim 1 is also consistent with the problem disclosed by the '768 patent of a trader missing an intended price because the market changed during the time required for a trader to read the prices displayed and to manually enter an order. *Id.* at 2:35–62.

Claim 1 does not recite any limitation that specifies how the computer implements the steps or functions for using a GUI. For example, claim 1 recites displaying an arrangement of the market information on the GUI. The bid quantity is displayed in the bid region at a location that corresponds to a price along a price axis and the ask quantity is displayed in an ask region at a location that corresponds to a price along the price axis. *Id.* at 11:53–64. Claim 1 does not specify how the computer maps the bid quantities, ask quantities, and price axis to the display. The '768 patent does not disclose an unconventional or improved method of mapping the bid quantities, ask quantities, and price axis to the display. It states that "[t]he physical mapping of such information to a screen grid can be done by any technique known to those skilled in the art" and that "[t]he present invention is not limited by the method used to map the data to the screen." *Id.* at 4:64–67.

The '768 patent discloses that at least 60 exchanges throughout the world utilize electronic trading and discloses that it is known that electronic trading includes analyzing displayed market information and updated market information to send trade orders to an exchange. *See id.* at 1:26–2:22. Similarly, Mr. Thomas indicates that traders in prior trading systems, including pre-electronic open outcry systems, which have been used for over one hundred years, send trade orders to an exchange based on price, such as the inside market prices or other prices. Ex. 2169 ¶¶ 36, 62, and 63. Mr. Thomas testifies that “[i]n the trading pit, traders utilize shouting and hand signals to transfer information about buy and sell orders to other traders. To avoid confusion, the inside market prices were the focus, and traders could only shout and signal regarding their interest at the best bid/offer or at prices that improves the best bid/offer.” *Id.* ¶ 36. The '768 patent discloses that electronic exchanges are known to provide the market depth for display that is the inside market and a few orders away from the inside market. Ex. 1001, 5:3–5. Further, Exhibit 1020 discloses that long before the '768 patent traders maintained books that plotted bids and asks (e.g., the market depth) along a price axis. *See* Ex. 1020, 44–46. Exhibit 1020 states “[s]pecialists enter public orders, that are away from the market, in their books by price and in the order they are received.” *Id.* at 44. Figure 4-2 of Exhibit 1020 is reproduced below.

BUY		SELL
BKR R - 100	22	
BKR L - 300 BKR A - 500	1/8	
BKR D - 200 BKR E - 300	1/4	
	3/8	
	1/2	
	5/8	BKR F - 300 BKR G - 600
	3/4	BKR B - 100 BKR M - 200
	7/8	BKR S - 400

Figure 4-2 depicts a page of a book of a trader. *Id.* at 44–45. Orders to buy or sell a commodity are plotted along a price axis. For example, Figure 4–2 shows the best bid at $22\frac{1}{4}$ and the best ask at $22\frac{5}{8}$. *Id.* at 44. Ex. 1020 states: “The NYSE specialist’s book is maintained on a CRT and referred to as a *display book*. This electronic book sorts all orders coming to the specialist in time and price sequence....” *Id.* at 46.

Given this, we determine that placing an order based on displayed market information, such as the inside market and few other orders, as well as updating the market information is a fundamental economic and conventional business practice. We are persuaded by Petitioner that the method of claim 1

could be performed in the human mind or with the aid of pen-and-paper with little difficulty because the claim requires plotting only a few data points (i.e., the inside market). *See* Pet. 18 (citing Ex. 1020, 44–46; Ex. 1007 ¶¶ 73–74).

Patent Owner argues that the claims of the '768 patent are not directed to a fundamental economic practice, longstanding commercial practice, or business method. PO Resp. 85–87. Patent Owner contends the “claims did not have a pre-electronic equivalent as electronic trading operates in fundamentally different ways from open outcry.... In open outcry, trader could not publish orders away from the inside market, and could pick and choose with whom they wanted to trade.” *Id.* at 85 (citations omitted). Patent Owner’s arguments are unpersuasive because they are not commensurate with the scope of the claims. For example, claim 1 recites a method of placing a trade order for a commodity on an exchange, which includes steps of displaying the inside market and sending the trade order to the electronic exchange. Ex. 1001, 11:46–12:36. Claim 1 does not recite any steps as to how the electronic exchange matches or fills the order. *See id.* Claim 1 requires publishing the inside market and does not require publishing the market depth. *See id.*; *see also id.* at 5:1–7. Claim 1 does not specify how the order is filled at the electronic exchange or preclude a trader from picking and choosing with whom they want to trade. *See id.* at 11:46–12:36.

The claims at issue here are like the claims at issue in *Affinity Labs*. In *Affinity Labs*, the claim at issue recited an application that enabled a cellular telephone to present a GUI displaying a list of media

sources that included selectable items for selecting a regional broadcasting channel. *Affinity Labs*, 838 F.3d at 1255–56. The claim also recited that the cellular telephone was enabled to transmit a request for the selected regional broadcasting channel. *Id.* at 1256. The claims at issue here are also like the claims at issue in *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229 (Fed. Cir. 2016). See Pet. Reply 8–9. In *Ameranth*, the claim at issue recited a GUI that displayed menu items in a specific arrangement, a hierarchical tree format. Menu items were selected to generate a second menu from a first menu. *Ameranth*, 842 F.3d at 1234. In both *Affinity Labs* and *Ameranth*, the court determined that the claims were not directed to a particular way of programming or designing the software, but instead merely claim the resulting systems. The court thus determined that the claims were not directed to a specific improvement in the way computers operate. *Affinity Labs*, 838 F.3d at 1260–61; *Ameranth*, 842 F.3d at 1241. Here, the claims also recite the resulting GUI and are not directed to specific improvements in the way the computers operate. “Though lengthy and numerous, the claims [that] do not go beyond requiring the collection, analysis, and display of available information in a particular field, stating those functions in general terms, without limiting them to technical means for performing the functions that are arguably an advance over conventional computer and network technology” are patent ineligible. *Elec. Power Grp.*, 830 F.3d at 1351. “Generally, a claim that merely describes an ‘effect or result dissociated from any method by which [it] is accomplished’ is not directed to patent-eligible subject matter.” *Ameranth*, 842 F.3d

at 1244 (quoting *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1348 (Fed. Cir. 2015)).

The claims of the '768 patent are unlike the claims at issue in *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014) and *Enfish*. See Pet. 29–30; Pet. Reply 6. In *DDR Holdings*, the court determined that the claims did not embody a fundamental economic principle or a longstanding commercial practice. The claims at issue in *DDR Holdings* were directed to retaining website visitors, which the court determined was a problem “particular to the Internet.” *DDR Holdings*, 773 F.3d at 1257. The court also determined that the invention was “necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks” and that the claimed invention did not simply use computers to serve a conventional business purpose. *Id.* In *Enfish*, the claim at issue was directed to a data storage and retrieval system for a computer memory. *Enfish*, 822 F.3d at 1336–37. The court determined that the claims were directed to an improvement in the functioning of a computer and were not simply adding conventional computer components to well-known business practices. *Id.* at 1338. Here, in contrast, claim 1 is directed to a fundamental economic principle or a longstanding commercial practice and not directed to an improvement in the computer, but simply to the use of the GUI in a method of placing an order based on displayed market information, as well as updating market information. See Pet. 29–30.

Patent Owner argues that the GUI disclosed in the '768 patent solves an alleged problem of the Fig. 2

GUI, displaying the inside market at a fixed location, while the displayed prices change as the market changes. *See* PO Resp. 81–83. If a trader was focused on trading at a particular price, the trader could miss its intended price using the Fig. 2 GUI because the price could change as the trader clicked it. *Id.* at 2. Patent Owner contends that the '768 patent solves this problem “by combining a dynamic display of bid and ask indicators that move relative to a price axis.” *Id.* at 4. The problem of a price changing just as a trader clicks on the price is not disclosed in the '768 patent. Patent Owner’s argument is unpersuasive because it is not commensurate with the scope of the claim. Claim 1 does not require the price axis to be static. *See* Ex. 1001, 11:46–12:36. It does not preclude the values of the price axis from changing as the market information updates. In other words, the claims allow for a price value associated with the order entry location to change as market information updates and change at the time a trader is selecting a corresponding order entry location. *See* Tr. 44–60. The claimed subject matter does not solve the problem alleged by the Patent Owner.⁵

⁵ During oral hearing, Patent Owner noted the dissenting opinion in related CBM2015-00181. Tr. 53:14–54:1. Since that time, however, it has become increasingly clear that movement of the price axis is significant. *See, e.g.*, Tr. 60:10–13 (Patent Owner acknowledging that movement of the price axis does not solve the alleged problem). The Federal Circuit’s decision addressing eligibility of patents related to the '768 patent focused on solving the problem alleged by Patent Owner. *See Trading Techs. Int’l, Inc. v. CQG, Inc.*, 675 F. App’x 1001, 1004–05 (Fed. Cir. Jan. 18, 2017) (non-precedential).

Further, claim 1 of the '768 patent is unlike the claims at issue in *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299 (Fed. Cir. 2016). In *McRO*, the court held that claims that recited “a specific asserted improvement in computer animation” were not directed to an unpatentable abstract idea because they go “beyond merely organizing existing information into a new form or carrying out a fundamental economic practice.” *McRO*, 837 F.3d at 135. Here, the claims merely organize existing market information so that it is displayed or plotted along a price axis. Plotting bids and asks along a price axis is not a specific improvement to a functioning of a computer. *See* Ex. 1020, 44–46.

Patent Owner argues that the claims of the '786 patent are patent eligible under *CQG* because the '786 patent is a continuation of the patents at issue in *CQG*. PO Resp. 78. The claims of the '786 patent, however, are broader in some aspects than the claims of the '132 patent. For example, the claims of the '786 patent do not recite the static price axis feature claimed by the '132 patent. In *CQG*, the Federal Circuit referred to even those narrower claims as on the line between patent eligibility and ineligibility (*CQG* at *4 (noting the “close question[] of eligibility”)). Thus, comparing the claims of the patents involved in *Trading Technologies* is not particularly helpful here.

3. Inventive Concept

Next we turn to “the elements of each claim both individually and as an ordered combination” to determine whether the additional elements “transform the nature of the claim” into a “patent-eligible applica-

tion.” *Mayo*, 768 S. Ct. at 1297–98. The additional elements must be more than “well-understood, routine, conventional activity.” *Id.* at 1298.

Petitioner contends that claim 1 does not recite an inventive concept. Pet. 20–25; Pet. Reply 7–9. Patent Owner disagrees. PO Resp. 87–89.

First, claim 1 of the ’768 patent recites “a method of placing a trade order for a commodity on an electronic exchange using a graphical user interface and a user input device.” Ex. 1001, 11:46–48. The ’768 patent discloses that its system can be implemented “on any existing or future terminal or device” (*id.* at 4:4–8), which are known to include displays, and discloses that the input device can be a mouse (*id.* at 4:8–18), which is a known input device. A mere recitation of a GUI does not make the claim patent eligible. *See Affinity Labs*, 838 F.3d at 1257–58; *Ameranth*, 842 F.3d at 1236–1242; *Internet Patent Corp.*, 790 F.3d at 1348–1349. A recitation of a generic GUI merely limits the use of the abstract idea to a particular technological environment. “Limiting the field of use of the abstract idea to a particular existing technological environment does not render any claims less abstract.” *Affinity Labs*, 838 F.3d at 1258 (citing *Alice*, 134 St. Ct. at 2358; *Mayo*, 132 S. Ct. at 1294).

Second, claim 1 recites steps of displaying indicators representing a quantity associated with a highest order to buy the commodity or lowest order to sell the commodity in a bid display region or ask display region, respectively and moving the indicators upon receipt of market information. Ex. 1001, 11:46–48. Locations in the bid or ask display region correspond to a price level along a price axis. *Id.* Essentially, these

limitations require plotting the inside market along a price axis. Plotting information along an axis is a well-understood, routine, conventional, activity. See Ex. 1020, 44–46. The Fig. 2 GUI includes regions for displaying indicators of bid and ask quantities and regions for displaying corresponding prices. For example, the Fig. 2 GUI displays the bid quantity in BidQty column 202 at locations that correspond to the bid prices in BidPrc column 203. Ex. 1001, 5:12–25. This is akin to plotting information BidQty and AskQty along a price axis. Further, Mr. Thomas testifies that prior GUIs, which are similar to the Fig. 2 GUI, “displayed the locations for the best bid and ask prices such that the prices were displayed vertically (e.g., with the location for the best ask price being displayed above the location for the best bid price).” Ex. 2169 ¶ 62; see also Ex. 1017, 107, Ex. 1011, Fig. 2a (depicting a trading screen having a central order price column and ask and bid orders in adjacent corresponding columns). Displaying the best ask price above a best bid price would be displaying a common column of price levels. The ’768 patent states:

the physical mapping of such information to a screen grid can be done by any technique known to those skilled in the art. The present invention is not limited by the method used to map the data to the screen display.

Id. at 4:64–67. These steps of claim 1 require merely a rearrangement of market information that was known to be displayed in corresponding columns on a GUI. *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1370 (Fed. Cir. 2011) (holding “[t]he mere collection and organization of data” patent-ineligible).

Third, claim 1 also recites steps of displaying an order entry region for receiving commands to send trade orders, setting trade order parameters, and sending trade orders to the electronic exchange with a single action. *Id.* at 11:65–67, 12:32–36. Methods that permit single action entry of an order, which has preset default parameters, by clicking on a cell in a display of a GUI are known technology. Ex. 2169 ¶¶ 51, 58–59; Ex. 1008 ¶ 20. The additional elements must be more than “well-understood, routine, conventional, activity.” *Mayo*, 132 S. Ct. at 1298.

The individual elements of the claim do not transform the nature of the claim into a patent-eligible application. They do not add significantly more to the abstract idea or fundamental economic practice. Contrary to Patent Owner’s argument, the claim simply recites the use of a generic GUI with routine and conventional functions. Even considering all of the elements as an ordered combination, the combined elements also do not transform the nature of the claim into a patent-eligible application. Indeed, as discussed above, the Fig. 2 GUI disclosed in the ’768 patent includes a similar combination of elements.

For the reasons discussed above, the claims 1 and 23 of the ’768 patent are not directed to patent eligible subject matter under 35 U.S.C. § 101.

4. Dependent Claims

Petitioner contends that the additional elements recited by dependent claims 2–22 do not add significantly more to the abstract idea so as to render the claims patent-eligible. Pet. 25–29. Patent Owner makes no arguments directed to the eligibility of the

dependent claims. *See generally* PO Resp. We are persuaded by Petitioner that dependent claims 2–22 patent ineligible under 35 U.S.C. § 101. *See* Pet. 25–29 (citing Ex. 1007).

5. Conclusion

Having considered the information provided in the Petition, we are persuaded that Petitioner has demonstrated claims 1–23 are unpatentable under 35 U.S.C. § 101.

D. Obviousness Challenges

Section 103 forbids issuance of a claim when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103. The ultimate determination of obviousness under § 103 is a question of law based on underlying factual findings. *In re Baxter Int’l, Inc.*, 678 F.3d 1357, 1362 (Fed. Cir. 2012) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1996)). These underlying factual considerations consist of: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of non-obviousness such as “commercial success, long-felt but unsolved needs, failure of others, etc.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting *Graham*, 383 U.S. at 17–18).

Petitioner challenges claims 1–13, 15, 16, 18, and 21–23 as having been obvious over TSE and Belden,

claims 14, 17, 19, and 20 as having been obvious over TSE, Belden, and Cooper.

1. TSE Printed Publication Status

Petitioner argues that TSE is prior art under 35 U.S.C. § 102(a). Pet. 11–12. In support of its showing that TSE qualifies as prior art, Petitioner relies on the November 21, 2005, deposition testimony of Atsushi Kawashima taken during litigation between Patent Owner and a third party, eSpeed, Inc. *Id.*; Ex. 1019.

Whether a document qualifies as a printed publication under 35 U.S.C. § 102(a) is a question of law based on underlying findings of fact. *In re Enhanced Sec. Research, LLC*, 739 F.3d 1347, 1354 (Fed. Cir. 2014) (citing *In re Hall*, 781 F.2d 897, 899 (Fed. Cir. 1986)). The Federal Circuit “has interpreted § 102 broadly, explaining that even relatively obscure documents qualify as prior art so long as the public has a means of accessing them.” *Id.* (citing *Hall*, 781 F.2d at 899).

Our leading case on public accessibility is *In re Hall*, 781 F.2d 897 (Fed. Cir. 1986). In *Hall* we concluded that “a single cataloged thesis in one university library” constitutes “sufficient accessibility to those interested in the art exercising reasonable diligence.” *Id.* at 900. Thereafter, in *Constant v. Advanced Micro–Devices, Inc.*, we explained that “[a]ccessibility goes to the issue of whether interested members of the relevant public could obtain the information if they wanted to.” 848 F.2d 1560, 1569 (Fed. Cir. 1988). Therefore, “[i]f accessibility is proved, there is no requirement to show that particular

members of the public actually received the information.” *Id.*

Enhanced Sec. Research, LLC, 739 F.3d at 1354. The determination of whether a document is a “printed publication” under 35 U.S.C. § 102 involves a case-by-case inquiry into the facts and circumstances surrounding its disclosure to members of the public. *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004).

TSE is entitled “Futures/Option Purchasing System Trading Terminal Operation Guide” of the “Tokyo Stock Exchange Operation System Division.” Ex. 1017, 1.⁶ In the middle of page 5 is the annotation “August, 1998” above the words “Tokyo Stock Exchange Operation System Division.” *Id.* at 5. Petitioner argues that TSE is prior art under 35 U.S.C. § 102(a) because it was published in August of 1998 by giving two copies to each of the about 200 participants in the Tokyo Stock Exchange, who were free to do whatever they wanted with their copies of the publication. Pet. 11 (citing Ex. 1019, 12–33).

In support of its arguments regarding TSE as prior art, Petitioner directs us to portions of Mr. Kawashima’s testimony. At the time of his testimony, Mr. Kawashima testified that he was employed by the Tokyo Stock Exchange and was so at the time of the TSE manual, August 1998. Ex. 1019, 5–11. He further testified that TSE “is the current TSE futures options trading system terminal document, manual” that was prepared August of 1998 by the Tokyo Stock Exchange and that he was in charge of preparing the

⁶ References are to pages located at center bottom of the English translation of TSE (Ex. 1017).

document. *Id.* at 10–11. Mr. Kawashima also testified that the purpose of the manual was that “in 1998 we replaced the futures options trading system and so this new manual was prepared because there were changes to the way the trading terminals were operating.” *Id.* at 12. Kawashima further testified that the manual was distributed to “participants” in August of 1998, who were “securities companies for banks who are able to carry out futures options trading at the TSE” and that the “manual was given to explain those changes” made with respect to the operation of the TSE trading system and terminals. *Id.* at 12, 14. Mr. Kawashima testified that the manual was given to around 200 “participant” companies—all companies that conduct futures option trading on the Tokyo Stock Exchange. *Id.* at 13.⁷ According to Mr. Kawashima, two copies were distributed to each company, by having a person from each company come to the Tokyo Stock Exchange operating system section to pick up their copies of the manual, and that there was no restriction on what the participants could do with the 1998 manual once they received it. *Id.* at 14–15. Mr. Kawashima personally distributed the TSE manual to some of the participants. Ex. 2163, 60:13–24.

Notwithstanding Patent Owner’s arguments, which we address below, we are persuaded by Petitioner’s showing, which we adopt as our own, that TSE qualifies as prior art under 35 U.S.C. § 102(a). Petitioner asserts, with supporting evidence, that

⁷ We understand the then “participants” included such companies as Goldman Sachs Securities, Merrill Lynch, and Morgan Stanley. Ex. 2163, 58:5–17; Ex. 2169 ¶ 32.

TSE was distributed to *participants* in the Tokyo Stock Exchange. Pet. 11; Ex. 1019, 12, 14. Based on the evidence before us, the participants were securities companies for banks. The purpose of the distribution of the manual was to alert the securities companies of *changes to the way the trading terminals* of the Tokyo Stock Exchange *operated*. Ex. 1019, 12, 14. Indeed, TSE is a user manual that includes, for example, in Chapter 2, instructions for terminal system configuration to enable a participant, such as a security company to connect to the Tokyo Stock Exchange. Ex. 1017, 10–25. Chapter 15, entitled “Response To A Problem” provides detailed explanations should a problem arise with terminal equipment, communication circuit difficulties, central system recovery difficulties, etc., along with in-house procured terminal problem handling instructions. *Id.* at 5. Thus, TSE is more than a user manual for how to trade on the Tokyo Stock Exchange, but also includes how to electronically connect to the Tokyo Stock Exchange.

The evidence that is before us, both circumstantial and direct, supports a finding that TSE was made accessible to securities companies and all of the personnel in such a company, who would have employed technical support personnel, such as computer scientists or engineers, who would have needed a copy of the TSE manual to configure their own system to electronically communicate, and to continue to trade securities, with the Tokyo Stock Exchange. Thus, the securities companies would have included computer scientists or engineers, as well as traders. We find that all such persons who worked at the securities companies would have been interested members of the relevant public.

2. Patent Owner's Contentions

Patent Owner argues that the evidence fails to prove TSE is prior art. PO Resp. 14–24. We begin by addressing Patent Owner's assertions that Mr. Kawashima's testimony should be given little or no weight because his testimony is not corroborated and he is an interested witness. *Id.* at 22–24. Patent Owner argues that Kawashima's employer—the Tokyo Stock Exchange—challenged Patent Owner's Japanese counterpart to U.S. Patent No. 6,766,304 by providing TSE to the Japanese Patent Office. *Id.* at 24. Patent Owner further argues that the Tokyo Stock Exchange wanted the Japanese Patent Office to rely on “these documents” to prevent Patent Owner from obtaining the Japanese patent. *Id.* (citing Ex. 2163, 39:23–40:20, 42:14–43:10; Ex. 1019, 110:10–14). Patent Owner concludes that because Kawashima's employer tried to use TSE to prevent Patent Owner from obtaining the 6,766,304 patent, Kawashima is not disinterested. *Id.*

We are not persuaded that Kawashima is an interested witness and that his testimony should be given little weight. First, the patent involved here is not the same as the patent involved before the Japanese Patent Office and we do not understand what Patent Owner means by “these documents.” In any event, Patent Owner has not shown that what occurred in a proceeding before the Japanese Patent Office involving a different patent is relevant to the facts of this proceeding. Patent Owner has not shown sufficiently that Mr. Kawashima had an interest, himself, regarding the outcome of the Japanese Patent Office pro-

ceeding. Even assuming that the Tokyo Stock Exchange had an interest in that earlier proceeding, it does not follow necessarily that Mr. Kawashima himself had an interest in it as well. We have considered the evidence to which we are directed, but do not find that evidence (passages from Mr. Kawashima's original and cross examination) to support Patent Owner's assertions that Mr. Kawashima is biased. Indeed, when asked if the Tokyo Stock Exchange preferred that vendors like Trading Technologies not have patents on trading screens, Mr. Kawashima testified, that that was "not something I would know." Ex. 2163, 41:6–12. Lastly, Patent Owner has not demonstrated sufficiently that Mr. Kawashima's meetings with Petitioner's attorneys prior to his cross examination is demonstrative of "bias." PO Resp. 24. Patent Owner has not shown why Mr. Kawashima's meeting with Petitioner's counsel prior to his deposition would make him biased. For these reasons, we are not persuaded that Mr. Kawashima is an interested witness.

We also are not persuaded by Patent Owner's argument that because Mr. Kawashima's testimony is uncorroborated we should give it little weight. PO Resp. 22–23. In support of the argument, Patent Owner cites to cases regarding an *interested witness*. See, e.g., *id.* at 22. As explained above, Patent Owner has not shown sufficiently that Mr. Kawashima is an interested witness. The other arguments made, e.g., that there is no evidence of when the manuals were picked up or by whom or what a person did with the document once they received it, are factors to consider when determining whether a document was publically accessible, which we address below.

For all of these reasons, we credit the testimony of Mr. Kawashima. We find that the facts discussed above regarding Mr. Kawashima’s testimony (Ex. 1019) are supported by a preponderance of the evidence and are undisputed.⁸ Although Mr. Kawashima was cross-examined, Patent Owner does not direct attention to portions of his cross examination testimony, or any other evidence, that would outweigh Mr. Kawashima’s original testimony (Ex. 1019) regarding what the TSE manual was, why it was distributed, how it was distributed, when it was distributed, and to whom it was distributed.

Patent Owner argues that Petitioner has not established that TSE was publically available. PO Resp. 14–16. In particular, Patent Owner argues that there is no evidence that anyone actually received a copy of TSE or whether the receivers of such document were persons of ordinary skill in the art. *Id.* (quoting *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348 (Fed. Cir. 2016) (a reference will be considered publicly accessible if it was “disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it.”)).

Patent Owner’s argument that there is no evidence that anyone actually received a copy of TSE is misplaced. The proponent of a document need not show that particular members of the interested public

⁸ The burden of showing something by a preponderance of the evidence simply requires the trier of fact to believe that the existence of a fact is more probable than its nonexistence. *Concrete Pipe & Products of California, Inc. v. Construction Laborers Pension Trust for Southern California*, 508 U.S. 602, 622 (1993).

actually received the information. See, e.g., *In re Enhanced Sec. Research, LLC*, 739 F.3d 1347, 1354 (Fed. Cir. 2014); *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1569 (Fed. Cir. 1988); *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348 (Fed. Cir. 2016). Rather, accessibility goes to the issue of whether persons interested and ordinarily skilled in the subject matter could obtain the information if they wanted to. *Id.* Here, we have before us persuasive evidence that TSE was made publically accessible by providing two copies to each of the about 200 participants (securities companies for banks) in the Tokyo Stock Exchange, who were free to do whatever they wanted with their copies of the publication. Ex. 1019, 12, 14. For these same reasons, we are not persuaded by Patent Owner's implicit argument that Petitioner need show that the two copies of the TSE manual available for pick up by the 200 participant companies actually were picked up. In any event, Mr. Kawashima testified that he personally distributed the TSE manual to some of the participants. Ex. 2163, 60:13–24.

Patent Owner argues that the participants (securities companies for banks) who allegedly received copies of the TSE manual are not persons of ordinary skill in the art, which Patent Owner submits would be GUI designers, and not traders at a stock exchange. PO Resp. 16–17. We are not persuaded by Patent Owner's argument.

The patent before us is a business method patent, the subject matter of which is represented by both the business and technical sides of the spectrum. Here, where the patent is directed to trading commodities

on an exchange using a computer, we must consider all interested members of the public, which would include not only technical personnel, but traders as well. Traders of commodities at securities companies for banks would be interested members of the public.

In any event, there is sufficient evidence for us to find that the securities companies for banks also would have employed technical personnel as well, and even a “GUI designer.” As explained above, the purpose of the TSE manual was to alert the securities companies of changes to the way the trading terminals of the Tokyo Stock Exchange *operated*. Ex. 1019, 12, 14. The TSE manual includes information and instructions of how to electronically connect to the Tokyo Stock Exchange. TSE is not simply a “how to trade commodities” user manual as Patent Owner seems to suggest. The strong circumstantial evidence supports finding that TSE was made accessible to securities companies who would have employed technical support personnel, such as computer scientists or engineers, to configure their system to electronically communicate, and to continue to trade securities, with the Tokyo Stock Exchange, based on the changes in operation of the terminals explained in the TSE manual. Thus, the securities companies would have included computer scientists or engineers, as well as traders. Lastly, even assuming that a person of ordinary skill in the art is narrowly limited to a “GUI designer” as Patent Owner asserts, we find that securities companies for banks (“participants”) provided their own front-end order entry software, and that such participants would have employed GUI de-

signers to formulate the front-end order entry software to facilitate trading on the Tokyo Stock Exchange. Ex. 2169 ¶ 32.

Patent Owner argues that because participants of the Tokyo Stock Exchange were contractually prohibited from modifying the terminals or software, there was no reason to provide the manual to GUI designers. PO Resp. 17. Patent Owner has not shown sufficiently that such a contractual provision would have prevented persons interested or even ordinarily skilled in the subject matter from receiving copies of TSE. For all of the above reasons, we are persuaded that TSE was publically accessible.

Patent Owner additionally argues that there is no evidence that a person having ordinary skill in the art could have located TSE using “reasonable diligence,” because there is no evidence that such a person searching for TSE would find it, such as being placed in a library, indexed, or catalogued, or directions to locate TSE. PO Resp. 20. We determine above, that the record evidence supports a determination that TSE was publically accessible to persons interested and ordinarily skilled in the subject matter. Patent Owner’s arguments are premised on the notion that none of the personnel at the securities banks are interested and ordinarily skilled in the subject matter, which we reject. Thus, Patent Owner’s argument is moot.

For all of the above reasons, we determine that TSE qualifies as prior art.

3. Claims 1 and 23

With respect to claims 1 and 23, Petitioner cites TSE as teaching the majority of limitations of the claims. Pet. 31–53. Petitioner cites Belden for the “single action” limitation in the claims, including the “setting” and “sending” via the “single action.” *See id.* at 41–46, 50–53. Petitioner proposes modifying TSE based on the teachings of Belden. *See id.* at 36–37. The testimony of Petitioner’s declarant Kendyl Román supports Petitioner’s analysis. *See Ex. 1007 ¶¶ 77–123.*

TSE describes a trading system that facilitates trading with an electronic exchange by receiving bid and offer information, displaying it to a user, and accepting and sending bid and offer orders. Ex. 1017, 6–13, 35. A trading terminal displays a GUI for depicting market information on a Board Screen, which is shown in the figure reproduced below (“TSE’s Board Screen”).

Zarbo 01		LT JGB 012		Reference 12298			
K13320 (13:17) (2012)							
10	250	On Close	250	15	Whole Day		
Note	Market Order	10	1		Session		
	157	1310	OVER		0	13291	(9:00)
2	1	3	13029		H	13320	(9:46)
2	4	132	13028		L	13274	(9:16)
4	145	13027			P	13310	(13:16)
2	70	13026					(2021)
5	2	29	13025		0	+12	
1	20	13024			V	42588	
1		13023#			L5	13005	(13:14)
		13022			L4	13008	(13:15)
		13021			L3	13009	(13:15)
10		13020K			L2	13008	(13:16)
		13019	17	3	L1	13009	(13:16)
		13018	47	1			
		13017	5	6			
		13016	36	3			
		13015	44	6			
		13014	45	2			
		13013	123	5			
		13012	141	3			
		13011	2	4			
		13010	817	3			
		UNDER	6084	160			

The figure reproduced above is illustrated on page 107 of TSE and depicts TSE’s Board Screen. The Board Screen includes a central order price at column 11—a price display. *Id.* at 111. The Board Screen can be placed in a “Scrolling Screen” mode where “the price display positions do not change automatically.” *Id.* at 115. TSE describes a number of ways to scroll the Board Screen to vertically scroll, including using the up/down scroll buttons, vertically moving the cursor, and pressing the up or down key on the keyboard. *Id.* at 116. To the left and right of order price column 11, at a location corresponding to price, are bid and offer indicators consisting of numbers representing the quantity of orders in respective columns 12, 13, and 14. *Id.* at 112. The Board Screen is automatically up-

dated with new bid and offer information from a central system every three seconds. *Id.* at 91. TSE explains that “[t]he board information on each Board Screen is automatically updated even if it has been scrolled vertically.” *Id.*

Román’s FIG. A, reproduced below, illustrates the market information received and displayed in TSE.

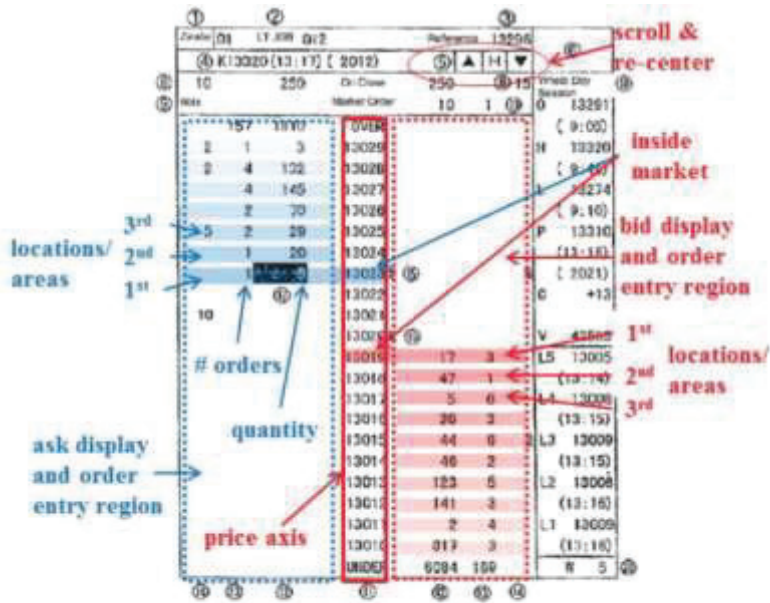
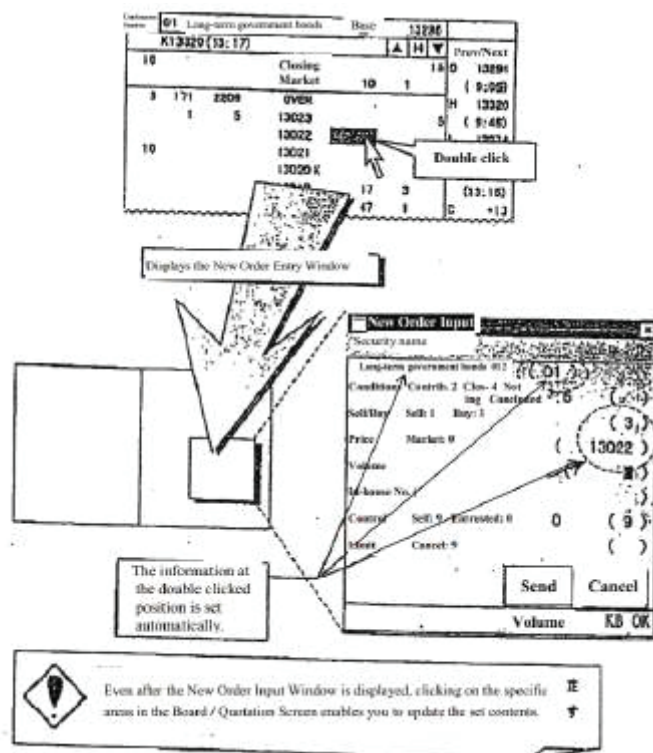


FIGURE A

Román’s FIG. A is an annotated version of the figure illustrated on page 107 of TSE depicting a Board Screen, and is found at page 45 of the Román Declaration. Mr. Román’s annotations indicate the portions of the Board Screen considered to correspond to various claim elements. The ’768 patent explains that “[f]or a commodity being traded, the ‘inside market’ is the highest bid price and the lowest ask price.”

Ex. 1001, 4:60–62. As illustrated above in Román’s FIG. A, TSE receives and displays inside market information.

TSE describes a user entering an order by double-clicking at a location along the price axis, which automatically displays a pop-up window displaying the selected price. *Id.* at 134, 137. A Figure appearing on page 137 of TSE is reproduced below.



The Figure appearing on page 137 of TSE depicts the displaying of the pop-up new order entry window. TSE discloses that double-clicking on a specific area of the Board/Quotation Screen displays a new order

entry window, which is automatically set with the information from the double-clicked area. Ex. 1017, 133, 139. The new order entry window includes a send button for sending the order to a central system. *Id.* at 137, 143. Clicking the send button sends an order to the exchange. *Id.* at 143.

As Petitioner points out, “TSE does not teach that the claimed ‘sending’ is achieved ‘in response to a selection of a particular location of the order entry region by a single action of a user input device.’” Pet. 34. Petitioner relies upon Belden to teach single-action order entry. *Id.*

Belden is titled “Simulated Live Market Trading System” and published on October 4, 1990. Ex. 1012, (54), (43). Belden discloses an electronic trading system for trading commodities, which has a display with icons representing active trades. *Id.* at 26–27.⁹ Belden discloses that “[t]rading is done by using the mouse to move a cursor onto the icon of a trader and pushing a button, i.e., ‘clicking’ on the icon.” *Id.* at 12. Belden discloses that a trader “benefits from the speed with which he can take or liquidate positions.” *Id.* at 4.

Petitioner provides rationale for combining the teachings of Belden with that of TSE. Pet. 36–37, 45–46, 52–53. Petitioner reasons that a person skilled in the art “would have been motivated to incorporate Belden’s single-action order techniques in TSE’s electronic trading system to achieve the predictable and desirable results of reducing the time needed to place an order and reduce operator error.” Pet. 37 (citing

⁹ We refer to the pagination inserted into Exhibit 1012 and not the original pagination.

Ex. 1007 ¶ 90). Petitioner additionally notes that “Belden provides motivation for the combination.” Pet. 36 (citing Ex. 1012, 4 (noting the speed benefits)).

Upon review of Petitioner’s evidence and analysis and taking into account Patent Owner’s arguments and evidence, discussed below, we determine the Petitioner shows by a preponderance of the evidence that claims 1 and 23 are unpatentable under 35 U.S.C. § 103 over TSE and Belden. In reaching our determination, we considered Patent Owner’s argument and evidence of secondary considerations, also discussed below.

Patent Owner disputes that TSE and Belden teaches all the limitations of claims 1 and 23 and argues that Petitioner fails to provide any evidence of motivation to combine Belden and TSE. PO Resp. 24. First, Patent Owner disputes that TSE and Belden teaches the “order entry region” and “single action” limitations. PO Resp. 25–26. Patent Owner argues that “TSE does not include the claimed ‘order entry region’ because selecting an area along the alleged price axis only opens a separate order entry window, it cannot be used to *send orders*.” PO Resp. 35 (citing Ex. 1017, 137). Patent Owner explains that “[b]ecause of the separate order entry window, TSE does not disclose the claimed ‘order entry region’ and functions of the claimed ‘graphical areas’ along a price axis.” PO Resp. 26 (citing Ex. 2169 ¶ 166). With respect to Belden, Patent Owner argues that Belden does not suggest the order entry region because “it is completely lacking any showing of a price axis and therefore cannot possibly disclose the claimed order entry region.” PO Resp. 26. Patent Owner further contends

that “even if TSE and Belden were combined in the manner suggested by Petitioners, one still would not arrive at the claimed invention because the suggested combination lacks an ‘order entry region’ as claimed.” *Id.* Patent Owner further contends that “Belden does not show a single action to both set parameters and send an order from an area that correspond to a price level along a price axis.” *Id.* at 26–27.

The problem with Patent Owner’s response is that it does not address the *combined* teachings of TSE and Belden asserted by Petitioner. *See In re Merck & Co., Inc.* 800 F.2d 1091, 1097 (Fed. Cir. 1986) (Non-obviousness cannot be shown by attacking references individually when the ground is predicated upon the teachings of a combination of references.) Regardless of whether Belden sends an order message, or executes a trade (as Patent Owner contends), there is no dispute it does this with a single action command received by a graphical area (clicking on an icon). *See, e.g., Ex. 1012, 12, 33.* As noted above, Petitioner’s challenge proposes modifying TSE to send its orders based on a “single action,” which is taught by Belden as explained above. There is no dispute, and we agree, that TSE teaches sending trade orders. *See PO Resp. 25–26* (explaining that in TSE, “selecting an area along the price axis only opens a separate order entry window” and “clicking ‘send[]’ to send the order”). There is also no dispute, and we agree, that TSE teaches automatically setting a price for the trade order. *See Ex. 1017, 137* (“Depending on the place that is double clicked, the...‘Order Price’...[is] set automatically.”). Petitioner’s proposed modification simply eliminates opening the separate window used to send trade orders in TSE and, instead, sends those orders

automatically with the single action that was used previously to open the order entry window. The *combined* teachings of TSE and Belden provide an order entry region having the single action features recited in the claims.

Second, Patent Owner disputes that TSE and Belden teaches the claimed first and second fixed locations and updating the display of the first and second indicators. PO Resp. 27–29. Patent Owner argues that “TSE does not disclose that the bid/ask quantity indicators are updated *on the display* in scroll mode.” *Id.* at 27–28. Patent Owner also argues that “TSE does not disclose that the user can bring up the new order entry window while in scroll mode” because “the scroll mode does not display updated market conditions...and as such a trader would not want to being the order entry process from a screen that does not accurately convey market conditions.” *Id.* at 28–29. Contrary to Patent Owner’s argument TSE states that “[t]he principal features relating to the display of board and quotation information are...[t]he board information on each Board Screen is automatically update[d] even if it has been scrolled vertically.” Ex. 1017, 91; *see also* Ex. 1007 ¶ 102 (testimony of Mr. Román). Patent Owner points to the testimony of Mr. Abilock, a Japanese translator, to assert that “the Japanese version of TSE does not make clear whether this updating occurs in memory only or on screen” and concludes that a person of ordinary skill in the art would have understood that the board information is only updated in memory. PO Resp. 28 (Ex. 2178 ¶¶ 20, 23–26). Mr. Abilock is a translator, and his testimony does not sufficiently support Patent Owner’s

conclusion as to what would be understood by a person of ordinary skill in the art. *See* Pet. Reply 16, n. 1. We, thus, are not persuaded by Patent Owner that TSE does not permit the user to access the new order entry window in scroll mode. *See* Pet. Reply 16–17.

Third, Patent Owner argues that “Petitioners’ purported motivation to combine—that Belden is ‘applicable to all markets’...is misplaced” and that “‘speed’ in Belden refers to instantaneous trade-making of open outcry pits.” PO Resp. 29–30. Regardless of the specific type of market to which Belden is related, we are persuaded that one skilled in the art would have appreciated that reducing the number of steps required to execute an order would result in a decrease in the amount of time required to place that order, and that users in various types of markets would have appreciated that mitigating the delay between choosing to place an order and placing that order would be beneficial. Patent Owner also argues that “TSE actually teaches away...by instructing the trader to click on the board screen to open an entirely separate new order input window....” PO Resp. 31–32. A reference teaches away from a claimed invention if it “criticizes, discredits, or otherwise discourages” modifying the reference to arrive at the claimed invention. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). A disclosure of instructing the trader to click on the board screen to open an entirely separate new order input window does not discourage modifying TSE to alternatively using single action order entry.

Patent Owner further alleges that Petitioner is using impermissible hindsight to arrive at the claimed invention and not from teachings of Belden or TSE.

PO Resp. 32. Patent Owner's argument is not persuasive because it does not address Petitioner's supporting evidence. As discussed above, we determine that Petitioner has shown by a preponderance of the evidence that one of ordinary skill in the art would have combined TSE and Belden. *See* Pet. 36–37 (citing Ex. 1007 ¶ 90; Ex. 1012, 4). Further, Patent Owner's own declarant, Mr. Thomas, indicates that single-action, as taught by Belden, is a known alternative for order tickets. *See* Ex. 1063, 72:7–74:10; Ex. 1008 ¶¶ 19–20.

For the reasons set forth above, we are persuaded that Petitioner has established, by a preponderance of the evidence that claims 1 and 23 are taught by the combination of TSE and Belden, and that one skilled in the art would have combined those teachings.

4. Claims 2–5, 10, 15, 16, 18, and 21–22

Petitioner additionally challenges claims 2–5, 10, 15, 16, 18, and 21–22 as being unpatentable over TSE and Belden. Pet. 73–75, 77–80. We have reviewed Petitioner's challenges to those claims, which Patent Owner does not dispute, as well as the evidence supporting those challenges.

We are persuaded by Petitioner's arguments and evidence, which we adopt, that the features recited in those claims are taught by the combination of TSE and Belden and that one skilled in the art would have combined those teachings. We determine the Petitioner shows by a preponderance of the evidence that claims 2–5, 10, 15, 16, 18, and 21–22 are unpatentable under 35 U.S.C. § 103 over TSE and Belden.

5. Claim 6

Claim 6 depends from claim 4 and further recites “dynamically displaying an entered order indicator in association with a price level along the price axis, wherein the entered order indicator represents an order pending at the electronic exchange.” Ex. 1001, 12:56–60.

Petitioner points to the figure on page 107 of TSE, reproduced above, as showing an entered order indicator. Pet. 55–56. Petitioner argues that the “ask order for a quantity of 5 at a price level of 13023” is an entered order indicator. *Id.* at 5 (citing Ex. 1007 ¶ 132).

Upon review of Petitioner’s evidence and analysis and taking into account Patent Owner’s arguments and evidence, discussed below, we determine the Petitioner shows by a preponderance of the evidence that claim 6 is unpatentable under 35 U.S.C. § 103 over TSE and Belden.

Patent Owner disputes that TSE discloses an entered order indicator. PO Resp. 32–33. Patent Owner argues that there is no display in TSE to represent a user’s trade order and that “in TSE the bids and asks at each level of the display represent *all of the orders* pending.” *Id.* Patent Owner’s argument is not persuasive because it is not commensurate with the scope of the claim. As discussed above, claim 6 does not require the entered order indicators to represent a *user’s* trade order.

6. Claims 7–9

Claim 7 depends from claim 6 and further recites “sending a message to the electronic exchange to de-

lete the order represented by the entered order indicator in response to a single action of the user input device with a pointer of the user input device positioned over the entered order indicator.” Ex. 1001, 12:61–65. Claims 8 and 9 depend from claim 7.

Petitioner argues:

Each of TSE and Belden teaches that traders interact with a GUI on a client device to “*send[] a message to the electronic exchange to delete*” an order. (TSE at 0006-13 (overview of system, including clients), 0077-80 (clients exchanging messages with central system), 0143 (sending input order to central system), 0155 (canceling orders); Belden 0014-19 (describing interaction between user terminals and host), 0037 (canceling orders).)

Belden further teaches deleting an order “*represented by the entered order indicator in response to a single action of the user input device with a pointer of the user input device positioned over the entered order indicator.*” Belden teaches that a trader can cancel an entered order using a mouse by clicking on the order in the trading arena. (Belden at 0037.) For example, “[t]o cancel a bid in MAR89 bonds” using a mouse, “point and click on your bid icon for MAR89 bonds with the mouse.” (*Id*; see also *id.* at 0038 (canceling all bids).)

Thus, both TSE and Belden teach canceling trade orders. It would have been obvious to a POSA to implement Belden’s single-action or-

der canceling in TSE’s electronic trading system to achieve the predictable and desirable results of reducing the time needed to cancel an order and of reducing operator error. (Román Decl. ¶ 136; *see also* Shneiderman at 0101-02 (desirable to reduce number of operator actions such as keystrokes).)

Pet. 56–57. Patent Owner disagrees and argues that “the Petition fails to provide any motivation to combine the single-action deletion [of Belden] with TSE.” PO Resp. 34.

We are not persuaded by Petitioner’s arguments and evidence that the combination of TSE and Belden teaches the limitation of claim 7.¹⁰ “In an *inter partes* review, the burden of persuasion is on the petitioner to prove ‘unpatentability by a preponderance of the evidence,’ 35 U.S.C. § 316(e), and that burden never shifts to the patentee.” *In re Magnum Oil Tools Int’l, Ltd.*, 892 F.3d at 1375 (quoting *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015)). Claim 7 depends from claim 6 and, as discussed above, Petitioner relies upon the buy and ask quantities on the TSE’s Board Screen depicted in the

¹⁰ As Petitioner notes, we rejected a similar argument by Patent Owner in CBM2015-00181. Pet. Reply 17–18 (citing Ex. 1060, 52–55). U.S. Patent No. 7,676, 411 B2 (“the ‘411 patent”) was the subject of claim of CBM2015-00181. Ex. 1060, 1. Unlike the claims here, the claim 9 of the ‘411 patent explicitly required that the entered order indicator represented a user’s trade order. *Id.* at 52. In CBM2015-00181, Petitioner did not cite to TSE’s bid and ask quantities to teach the entered order indicator but cited to Belden and argued that it would have been obvious to display the entered order indicator aligned with the price axis in TSE. *See id.* at 52–54. Petitioner does not make this argument here.

figure on page 107 of TSE to teach the claimed entered order indicator. Pet. 55–5. Petitioner’s argument with respect to claim 7 does not sufficiently explain why one of ordinary skill in art would have modified TSE such that an order can be canceled by a single action of the user input device with a pointer of the user input device positioned over the buy and ask quantities on the TSE’s Board Screen depicted in the figure on page 107. Mr. Román also does not provide a sufficient explanation. *See* Ex. 1007 ¶ 136. “To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 892 F.3d at 1380 (citing *KSR*, 550 U.S. at 418).

We determine the Petitioner fails to show by a preponderance of the evidence that claims 7–9 are unpatentable under 35 U.S.C. § 103 over TSE and Belden.

7. Claim 11

Claim 11 depends from claim 1 and further recites “wherein the bid and ask display regions are displayed in a window, the method further comprising centering the display of the first and second indicators in the window upon receipt of a centering instruction.” Ex. 1001, 13:12–15.

Petitioner contends that selection of the “home button [H]” while in the Scroll Screen in TSE teaches this feature. Pet. 58–60 (citing Ex. 1017, 115–116; Ex. 1007 ¶ 142). Upon review of Petitioner’s evidence and analysis and taking into account Patent Owner’s

arguments and evidence, discussed below, we determine the Petitioner shows by a preponderance of the evidence that claims 11 is unpatentable under 35 U.S.C. § 103 over TSE and Belden.

Patent Owner argues that “[t]his is not a manual re-centering command because it switches between modes (scroll mode to basic-board mode), also referred to as a modal shift, [and] returns the user to the basic Board screen.” PO Resp. 35. Patent Owner contends that “a [person of ordinary skill in the art] would not understand this mode switching to be a re-centering command.” *Id.* (citing Ex. 2169 ¶ 170).

Patent Owner’s contentions are not persuasive. There is no dispute, and we agree, that TSE teaches manual re-centering by switching between modes. *See* Ex. 1017, 116 (discussing switching from the “Scrolling Screen” to the “Basic Board Screen” by “[u]se the mouse to click the ‘H’ (Home) button on the Board Screen); *see also id.* at 110 (further explaining operation of the “home button,” noting that “[c]licking [the home] button with the mouse after the board information has been scrolled causes the screen to return to the Basic Board Screen, with the board display center price at the center”). The fact that re-centering is achieved by switching between modes does not change the fact that this is a re-centering command. The testimony from Patent Owner’s declarant, Mr. Thomas, is also unpersuasive because it, too, is not tied to any requirement in the claims, and instead requires re-centering without changing modes. The claims simply require “re-centering,” and are silent as to whether a mode must remain the same. *See* Ex. 2169 ¶ 170.

8. Claims 14, 17, 19, and 20

With respect to dependent claims 14, 17, 19, and 20, Petitioner contends that the combination of TSE and Belden teaches each limitation of the claims except that the first and second locations of the order entry region are within a cell and that the areas in the bid and ask display regions are a cell of a grid. Pet. 67–71. Petitioner contends that TSE suggests that its Board Screen uses a grid of cells because the figures on pages 137 and 138 of TSE depicts a cursor in a rectangular region of price columns 11 and 12 but does not explicitly disclose cells. *Id.* at 67. Petitioner relies upon Cooper to teach that it is well known to use a grid of cells because it allows for objects to neatly line up. *Id.* at 68. Petitioner states:

it would have been obvious to a POSA to combine a grid of cells (as disclosed by Cooper) with TSE’s Board Screen. . . . The combination would have been nothing more than combining prior art GUI elements according to known methods to yield the predictable and desirable result of aligning or arranging the various number in the rows and columns of TSE’s Board Screen.

Id. at 68. The testimony of Mr. Román supports Petitioner’s analysis. *See* Ex. 1007 ¶¶ 161–166.

We are persuaded by Petitioner’s arguments and evidence, which we adopt, that the features recited in these claims are taught by the combination of TSE, Belden, and Cooper and that one skilled in the art would have combined those teachings. We determine

the Petitioner shows by a preponderance of the evidence that claims 14, 17, 19, and 20 are unpatentable under 35 U.S.C. § 103 over TSE, Belden, and Cooper.

9. Secondary Considerations

As part of our obviousness analysis, we consider the arguments and corresponding evidence submitted by Patent Owner regarding secondary considerations of non-obviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). To be relevant, evidence of non-obviousness must be commensurate in scope with the claimed invention. *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011). There must be a nexus between the merits of the claimed invention and the evidence of secondary considerations. *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995). “Nexus” is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in determining non-obviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988).

Patent Owner contends that “there is a mountain of objective indicia of non-obviousness that proves the claimed invention is not obvious.” PO Resp. 43.

a. MD Trader

Patent Owner contends that “MD Trader [is] the commercial embodiment of the invention” (PO Resp. 45, 56), and refers to MD Trader throughout its discussion of secondary considerations of non-obviousness (*id.* at 35–78).

“There is a presumption of nexus for objective considerations when the patentee shows that the asserted objective evidence is tied to a specific product

and that product ‘is the invention disclosed and claimed in the patent.’ *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1329 (Fed. Cir. 2016). A patent challenger may rebut the presumption of nexus with evidence that shows the proffered objective evidence was due to extraneous factors other than the patented invention. *Id.*

As Petitioner notes, however, “the [Patent Owner Response] fails to explain how MD Trader embodies the claims.” Pet. Reply 20. The only discussion provided in Patent Owner’s Response as to how MD Trader includes the features recited in the challenged claims is a general allegation noted above that “MD Trader [is] the commercial embodiment of the invention...Ex. 2173, ¶¶ 20–23; Ex. 2169, ¶¶ 97, Ex. 2170, ¶¶ 24–31Ex.2169; Ex.2233 (explaining how each claim element is present in MD Trader).” PO Resp. 56. Such an incorporation by reference is inappropriate, as Patent Owner’s Response fails to explain how MD Trader includes the features of the claims. *See* 37 C.F.R. § 42.6(a)(3) (“Arguments must not be incorporated by reference from one document into another document.”); Paper 38, 3–4 (explaining that we will not consider any arguments that are not adequately explained in the Patent Owner’s Response).

Nevertheless, and as explained below, Patent Owner’s contentions regarding secondary considerations fail even if we assume that MD Trader includes the claim elements.

b. Unrecognized Problems

Patent Owner contends that “[t]he inventive GUI tool solved problems presented by conventional

GUIs,” which “exhibited problems with speed and accuracy.” PO Resp. 46. Patent Owner, however, offers no persuasive authority for the proposition that “unrecognized problems” is a secondary consideration of non-obviousness. *See id.* at 47 (citing *Leo Pharm. Prods., Ltd. v. Rea*, 726 F.3d 1346, 1353–54, 1357 (Fed. Cir. 2013)). An inventor’s discovery of a previously unrecognized problem is generally accounted for in the analysis of the scope of the prior art and a motivation to combine prior art elements, rather than it being a secondary consideration of non-obviousness. *See Leo Pharm. Prods.*, 726 F.3d at 1353–54; *see also S. Alabama Med. Sci. Found. v. Gnosis S.P.A.*, 808 F.3d 823, 827 (Fed. Cir. 2015). We note that Patent Owner’s contentions regarding “unrecognized problems” are not tied to any of the asserted references or rationale discussed above with respect to the challenges to claims 1–23 under § 103.

Accordingly, these contentions are not persuasive of non-obviousness.

c. Unexpected Results

Patent Owner contends that “[u]nexpected superior properties from an invention support the conclusion that the invention was not obvious to a [person of ordinary skill in the art].” PO Resp. 48 (citing *Procter & Gamble Co. v. Teva Pharm. USA, Inc.* 566 F.3d 989, 997 (Fed. Cir. 2009); *In re Soni*, 54 F.3d 746, 750 (Fed. Cir. 1995)). As the authority cited by Patent Owner explains,

[t]he basic principle behind [unexpected results supporting non-obviousness] is straightforward—that which would have been surprising

to a person of ordinary skill in a particular art would not have been obvious. The principle applies most often to the less predictable fields, such as chemistry, where minor changes in a product or process may yield substantially different results.

In re Soni, 54 F.3d at 750.

Patent Owner contends that “[a]lthough the invention achieved Brumfield’s intended benefit of increasing the likelihood that the user would get his/her desired price, this was not a problem widely appreciated by others.” PO Resp. 48. Patent Owner further contends that “the invention provided several other *unexpected* benefits as well.” *Id.* This is not persuasive of “unexpected results.”

Patent Owner does not allege that the GUI operated in some unexpected manner. Indeed, it is hard to imagine computer code (i.e., a set of instructions) operating in an unexpected manner, particularly when the ‘786 patent describes the programming associated with the GUI as insignificant. *See, e.g.*, Ex. 1001, 4:60–67 (explaining that “present invention processes [price, order, and fill] information and maps it through simple algorithms and mapping tables to positions in a theoretical grid program” and “[t]he physical mapping of such information to a screen grid can be done by any technique known to those skilled in the art”).

Accordingly, we are not persuaded by Patent Owner’s contentions regarding unexpected results.

d. Initial Skepticism

Patent Owner contends that “MD Trader was received with skepticism by TT’s own sales personnel.” PO Resp. 52 (citing Ex. 2169 ¶¶ 99–100, 103; Ex. 2211, 715:19–716:18; Ex. 2173 ¶¶ 16–19; Ex. 2170 ¶¶ 22–28; Ex. 2171 ¶¶ 39–40; Ex. 2173 ¶¶ 16–19). Initially, we reiterate that “[a]rguments must not be incorporated by reference from one document into another document” (37 C.F.R. § 42.6(a)(3)) and arguments not made in the Patent Owner’s Response will not be considered (Paper 38).

Patent Owner’s arguments related to “initial skepticism” are based primarily on the premise that “a [person of ordinary skill in the art] would have rejected outright a price axis with relative movement.” PO Resp. 54. Those contentions are unpersuasive. As noted above, TSE expressly teaches this feature. To the extent the other contentions related to “initial skepticism” are directed to traders simply being resistant to change, generally, those contentions are also unpersuasive. *See, e.g., id.* at 54 (discussing profitable traders being hesitant towards any type of change because change can alter their confidence). Those contentions are not tied in any meaningful way to the features of the claims.

That traders would have been resistant to accept anything different is not persuasive of non-obviousness.

e. Commercial Success

Patent Owner contends that MD Trader “became a huge commercial success.” PO Resp. 56. As noted above, Patent Owner does not explain, in its Patent

Owner Response, how MD Trader embodies the claimed invention. Even if MD Trader includes each feature recited in the claims, “[e]vidence of commercial success...is only significant if there is a nexus between the claimed invention and the commercial success.” *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311–12 (Fed. Cir. 2006). As explained above, the Patent Owner Response is silent as to any nexus between the alleged commercial success and the claimed invention. Petitioner argues there is no presumption of nexus, and that Patent Owner has not established the requisite nexus. Pet. Reply 19–20. We agree with Petitioner.

Patent Owner admits that MD Trader is part of a suite of software and not sold separately. Ex. 1064, 92:11–15. A limited exception to the presumption of nexus exists where the patented invention is only a component of the product to which the asserted objective considerations are tied. *Demaco*, 851 F.2d at 1392. Here, because MD Trader is a component of a suite of software, Patent Owner enjoys no presumption of nexus. Patent Owner fails to offer any meaningful discussion of nexus in its Patent Owner Response, other than a general assertion at the end of its discussion that “MD Trader was successful due to the patented features.” PO Resp. 46. Patent Owner’s contentions regarding commercial success fail for this reason alone.

Even if we were to assume nexus, Petitioner persuasively rebuts that presumption. Petitioner responds, for example, that Patent Owner’s increase in sales could easily have been the result of increases in the market itself during the relevant time period. Pet.

Reply 24. Petitioner explains that “in the U.S., both the trading volume and the number of actively traded commodities contracts exploded in the early-to-mid 2000s” and “[t]rading volume increased six-fold; the number of actively traded contracts increased five-fold.” *Id.* (citing Ex. 1072, 35–37). Exhibit 1072 is a document from the Commodity Futures Trading Commission (CFTC), and pages 35–37 support the trading volume increase alleged by Petitioner.

Petitioner also points to several unclaimed features being responsible for the alleged commercial success. Pet. Reply 20–21. In support of this contention, Petitioner cites Patent Owner’s own testimony from traders in the industry (Ex. 2223), noting, for example, that “Ryan...testified that MD Trader’s ability to display multiple trade windows...was a reason he used MD Trader,” “Grisafi identified one-click re-centering as a key feature” and “McElveen identified speed, precision, and one-click re-centering as [] key features.” *Id.* (citing Ex. 2223, 3–4, 22, 40). Patent Owner acknowledges that, “in this industry...*anything* that is even remotely appreciated as providing an edge is tried and spreads quickly if successful.” PO Resp. 56 (emphasis added).

Furthermore, Patent Owner does not provide information regarding sales volume or market share as compared to providers of competing products. Rather, Patent Owner only alleges an increase in its own sales, without reference to the market. *See* PO Resp. 56–61. This information, without market share information, is only weak evidence, if any, of commercial success. *See In re Applied Materials* 692 F.3d at 1299.

f. Copying

Patent Owner additionally contends that the invention was widely copied by others. PO Resp. 62–69. “[C]opying requires the replication of a specific product.” *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004).

Patent Owner refers to products allegedly including the claimed features, as well as consent judgments where others acknowledged infringement. PO Resp. 62–69. This is not persuasive evidence of copying. *See Iron Grip*, 392 F.3d at 1325 (“Not every competing product that arguably falls within the scope of a patent is evidence of copying. Otherwise every infringement suit would automatically confirm the non-obviousness of the patent.”).

Although Patent Owner repeatedly alleges that others copied the invention, there is no explanation, in the Patent Owner Response, to support those alleged copiers attempting to replicate specific products. For example, Patent Owner contends that “Mr. Deux, founder of licensee NinjaTrader, also acknowledged copying of the invention.” PO Resp. 64 (citing Ex. 2169 ¶¶ 128–130; Ex. 2247, 210:8–212:25). The evidence cited by Patent Owner, however, does not support that contention. For example, the cited portion of Exhibit 2247 is just another example of Patent Owner alleging copying based on the existence of similar products.

Patent Owner has failed to establish widespread copying.

g. Industry Praise

Patent Owner contends that widespread praise in the industry also supports non-obviousness. PO Resp. 69–71. In support of its “widespread praise” contentions, Patent Owner notes, for example, that the invention was characterized as a “unique vision,” “ingenious,” “paradigm change,” “revolutionary... not just an incremental improvement,” “outside of the box,” “huge innovation,” “significant advance,” “determining factor in our success,” “radically different,” “far superior,” “very significant departure [from the prior art],” “invaluable tool,” “stroke of genius,” “so significant that I cannot put a price on its value.” *Id.* at 69–70. Patent Owner proceeds to conclude that “[e]ach one of these was directed to the claimed features.” *Id.* at 54.

As with commercial success, however, evidence of industry praise is only relevant when it is directed to the merits of the invention claimed. *See Ormco*, 463 F.3d at 1311. Patent Owner offers no sufficient explanation, in its Patent Owner Response, as to how any of the alleged praise is due to specific features that are present in the claims.

h. Industry Acquiescence

Patent Owner contends that non-obviousness is further shown by “widespread acquiescence and acceptance in the industry, with many licenses and consent judgments acknowledging infringement and validity.” PO Resp. 71–72. Although licenses taken under the patent in suit may constitute evidence of non-obviousness, only little weight can be attributed to such evidence if the patentee does not demonstrate “a

nexus between the merits of the invention and the licenses of record.” *In re GPAC Inc.*, 57 F.3d at 1580 (internal quotation and citations omitted). Furthermore, as Petitioner notes, litigation-induced licensing, alone, does not establish non-obviousness. *See* Pet. Reply 26 (citing *EWP Corp. v. Reliance Universal Inc.*, 755 F.2d 898, 907–8 (Fed. Cir. 1985)).

We note that Patent Owner’s contention regarding licensing to traders is more related to commercial success than licensing in the context of secondary considerations of non-obviousness. *See* PO Resp. 71 (discussing traders purchasing software licenses, the MD Trader product).

i. Failure of Others

Patent Owner additionally contends that the alleged failure of others to make the invention supports non-obviousness. PO Resp. 72–75. Patent Owner’s contentions on this issue are not directed to any particular attempt and failure of others to make the claimed invention. *See id.* Indeed, it is difficult to imagine that would be the case with the claimed invention, as the ‘768 patent explains that there is nothing special about the programming required. Ex. 1001, 4:60–67.

Rather, Patent Owner’s contentions are directed to the allegation that the claimed invention did not exist before arrived at by Patent Owner. PO Resp. 72–75. This does not establish non-obviousness. *Iron Grip*, 392 F.3d at 1325 (“Absent a showing of long-felt need or the failure of others, the mere passage of time without the claimed invention is not evidence of non-obviousness.”). Patent Owner does not allege any

long-felt need existed. In fact, Patent Owner advances the opposite position, that the problem was not even recognized by others. *See* PO Resp. 74 (“Prior to the invention, [persons of ordinary skill in the art] failed to even appreciate the problems.”).

j. Other Evidence

Patent Owner additionally cites another party’s attempt to invalidate the ’768 patent as evidence of non-obviousness. PO Resp. 75–76. Patent Owner concludes that party’s “actions show that experts in the field recognized that prior art, including the TSE, was insufficient to render the invention obvious.” *Id.* at 76. We are apprised of no persuasive reason as to why those contentions establish non-obviousness in this proceeding.

k. Weighing Secondary Considerations

As explained above, Patent Owner has not established the majority of its alleged secondary considerations of non-obviousness. Weighing the evidence before us, Patent Owner’s contentions regarding secondary considerations of non-obviousness do not outweigh the strong case of obviousness discussed above. For example, as noted above, TSE teaches each feature of claim 1 other than the “single action” setting and sending, which is taught by Belden. As noted above, Belden itself, for example, provides motivation for the proposed modifications to TSE (e.g., increased speed).

Accordingly, we are persuaded that Petitioner has established, by a preponderance of the evidence, that claims 1–6 and 10–23 are unpatentable under 35 U.S.C. § 103.

E. Motions to Exclude

1. Patent Owner's Motion to Exclude

Patent Owner moves to exclude Exhibit 1016 (TSE) and Exhibit 1017 (TSE Translation). Paper 48 (“PO MTE”). Patent Owner seeks to exclude Exhibits 1016 and 1017 because they have not been authenticated per rule 901 of the Federal Rules of Evidence (FRE). PO MTE 1. Patent Owner further argues that Exhibit 1017 should be excluded under FRE 106 and 403 because it is incomplete and misleading. *Id.*

First, Patent Owner argues that Petitioner fails to sufficiently authenticate Exhibits 1016 and 1017 as required by FRE 901. PO MTE 2–5; PO MTE Reply 1–4. Petitioner relies upon the testimony of Mr. Kawashima¹¹ to authenticate Exhibits 1016 and 1017. PO MTE Opp. 1–10 (citing Exs. 1019, 2163). Patent Owner argues that the November 2005 deposition of Mr. Kawashima (Ex. 1019) does not sufficiently authenticate Exhibits 1016 and 1017 for many of the same reasons discussed above with respect to the public accessibility of TSE.

Patent Owner's argument is not persuasive. Patent Owner has not met its burden to show that either Exhibit 1016 or Exhibit 1017 should be excluded from the record. For the same reasons as discussed above, Patent Owner's arguments are unpersuasive. As Petitioner argues, Mr. Kawashima's testimony sufficiently establishes the authenticity. *See* PO MTE Opp. 3–10.

¹¹ Patent Owner argues that the November 2005 deposition testimony of Mr. Kawashima's (Exhibit 1019) is hearsay. MTE 2. Patent Owner, however, does not move to exclude Exhibit 1019.

Accordingly, we deny Patent Owner's Motion to Exclude with respect to Exhibits 1016 and 1017.

Second, Patent Owner argues Exhibit 1017 is inadmissible under FRE 106 and 403 because it is incomplete and misleading. PO MTE 5–6; PO MTE Reply 4–5. Patent Owner argues that Exhibit 1017 “omit[s] two translator's notes from Patent Owner's original translation.” *Id.* (citing Ex. 2178, 39–40).

Patent Owner's argument is not persuasive. FRE 106 provides that:

If a party introduces all or part of a writing or recorded statement, an adverse party may require the introduction, at that time, of any other part —or any other writing or recorded statement — that in fairness ought to be considered at the same time.

As Petitioner points out, “rather than providing a basis for excluding evidence, Fed. R. Evid. 106 is a vehicle for entry of additional evidence.” Here, the two translator's notes from Patent Owner's original translation already appear in the record. Ex. 2178, 39–40.

FRE 403 provides:

The court may exclude relevant evidence if its probative value is substantially outweighed by a danger of one or more of the following: unfair prejudice, confusing the issues, misleading the jury, undue delay, wasting time, or needlessly presenting cumulative evidence.

Patent Owner has not met its burden to show Exhibit 1017 should be excluded from the record under FRE 304. Patent Owner asserts that Exhibit 1017

should be excluded but does not provide a sufficient explanation why the probative value is substantially outweighed by being misleading. *See* PO MTE 5–6. Here, the two translator’s notes from Patent Owner’s original translation already appear in the record (Ex. 2178, 39–40) and we are capable of assigning the appropriate weight to Exhibit 1017.

Accordingly, we *deny* Patent Owner’s Motion to Exclude with respect to Exhibits 1017 for these additional reasons.

2. Petitioner’s Motion to Exclude

Petitioner moves to exclude various ones of Patent Owner’s Exhibits. Paper 44. Because the outcome of this trial does not change based on whether or not we exclude those exhibits, we *dismiss* Petitioner’s Motion to Exclude as moot.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 1–23 of the ’768 patent are unpatentable.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–23 of the ’768 are *unpatentable*;

FURTHER ORDERED that Patent Owner’s Motion to Exclude Evidence is *denied*;

FURTHER ORDERED that Petitioner’s Motion to Exclude Evidence is *dismissed*; and

App. 149

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

App. 150

UNITED STATES PATENT AND
TRADEMARK OFFICE

BEFORE THE PATENT TRIAL
AND APPEAL BOARD

IBG LLC,
INTERACTIVE BROKERS LLC,
TRADESTATION GROUP, INC., and
TRADESTATION SECURITIES, INC.,
Petitioner,

v.

TRADING TECHNOLOGIES INTERNATIONAL,
INC.,
Patent Owner.

Case CBM2016-00090
Patent 7,725,382 B2

Before SALLY C. MEDLEY, MEREDITH C. PETRA-
VICK, and JEREMY M. PLENZLER, *Administrative
Patent Judges*.

PETRAVICK, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Covered Business Method Patent Review
35 U.S.C. § 382(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. Background

IBG LLC, Interactive Brokers, LLC, TradeStation Group, Inc., and TradeStation Securities, Inc. (collectively, “Petitioner”), filed a Petition requesting covered business method patent review of claims 1–32 of U.S. Patent No. 7,725,382 B2 (Ex. 1001, “the ’382 patent”). Paper 5 (“Pet.”). Trading Technologies International, Inc. (“Patent Owner”) did not file a Preliminary Response.

On December 9, 2016, pursuant to 35 U.S.C. § 324, we instituted a covered business method patent review on the following grounds:

Ground	Prior Art	Challenged Claims
§ 101	n/a	1–32
§ 103	TSE ¹ and Belden ²	1–32

Paper 11 (“Institution Decision” or “Inst. Dec.”).

Thereafter, Trading Technologies International, Inc. (“Patent Owner”) filed a Patent Owner’s Response on February 27, 2017 (Paper 19, “PO. Resp.”) and Petitioner filed a Reply (Paper 38, “Pet. Reply”) to Patent Owner’s Response.

¹ TOKYO STOCK EXCHANGE OPERATION SYSTEM DIVISION, FUTURES/OPTION PURCHASING SYSTEM TRADING TERMINAL OPERATION GUIDE (1998) (Ex. 1004). Citations to this reference refer to its English translation (Ex. 1005).

² PCT Pub. No. WO 90/11571, pub. Oct. 4, 1990 (Ex. 1008).

Petitioner filed a Motion to Exclude (Paper 43) and Patent Owner filed an Opposition (Paper 49) to Patent Owner's Motion. Petitioner filed a Reply (Paper 51) in support of its Motion.

Patent Owner filed a Motion to Exclude (Paper 46) and Petitioner filed an Opposition (Paper 48) to Patent Owner's Motion. Patent Owner filed a Reply (Paper 52) in support of its Motion.

We held a hearing of this case on August 10, 2017. Paper 55 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 328(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–32 are patent ineligible under 35 U.S.C. § 101 and Petitioner has not shown by a preponderance of the evidence that claims 1–32 are unpatentable under 35 U.S.C. § 103 over TSE and Belden.

B. Related Proceedings

The '382 patent is the subject of numerous related U.S. district court proceedings. Pet. 2; Paper 8, 1–5.

The application that issued as the '382 patent ultimately claims, under 35 U.S.C. § 320, the benefit of application 09/590,692, that issued as U.S. Patent No. 6,772,132 ("the '132 patent"). Ex. 1001, (63). The '132 patent was the subject of *Trading Technologies International, Inc., v. CQG, Inc.*, 675 Fed. Appx. 1001 (Fed. Cir. 2017) ("CQG"). The Federal Circuit determined that the claims of the '132 patent are patent eligible under 35 U.S.C. § 101. The '132 patent was also the

subject of petitions for covered business method patent review in *TD Ameritrade Holding Corp. v. Trading Technologies International, Inc.*, CBM2014-00135 (PTAB), *CQG, Inc. v. Trading Technologies International, Inc.*, CBM2015-00058 (PTAB), and *IBG LLC v. Trading Technologies International, Inc.*, CBM2015-00182 (PTAB). Trial was instituted, but later terminated due to settlement, for CBM2014-00135. Institution was denied for CBM2015-00058. Institution was granted for CBM2015-00182.

Numerous other patents are related to the '382 patent and the related patents are or were the subject of numerous petitions for covered business method patent review and reexamination proceedings. *See* Pet. 2; Paper 8, 1–7.

C. The '382 Patent

The '382 patent is titled “Click Based Trading with Intuitive Grid Display of Market Depth.” Ex. 1001, (54). The '382 patent describes a display, named the “Mercury” display, and method of using the display to trade a commodity. *Id.* at Abstract, 3:12–16.

Before turning to a discussion of the Mercury display, a discussion of a conventional method of trading using a GUI is helpful. Figure 2 of the '382 patent is reproduced below.

FIG. 2

		201	202	203	204	205			
	Contract	Depth	BidQty	BidPrc	AskPrc	AskQty	LastPrc	LastQty	Total
1	CDHO	•	785	7626	7627	21	7627	489	8230
2			626	7625	7629	815			
3			500	7624	7630	600			
4			500	7623	7631	2456			
5			200	7622	7632	800			

Figure 2 of the '382 patent depicts a common GUI (“the Fig. 2 GUI”) that displays market information and is used to place trade orders for a commodity on an electronic exchange. *Id.* at 5:15–20, Fig. 2; *see also* PO Resp. 2–3 (describing the Fig. 2 GUI as “widely used”); Ex. 1025 ¶ 21 (describing the Fig. 3 GUI as a common dynamic screen); Ex. 2169 ¶¶ 61–62, 67, 69 (describing the Fig. 2 GUI as “ubiquitous by the time of the invention” and “prevalent”). As can be seen from the above, the Fig. 2 GUI’s screen has a grid having columns and rows. Row 1 shows the inside market. Ex. 1001, 5:19–21. The inside market is the highest bid price and the lowest ask price. *Id.* at 4:21–23. Rows 2–5 show the market depth, which are other bids or asks in the market. *Id.* at 4:23–24. The market information updates dynamically as the market updates. *Id.* at 5:31–32. The inside market, however, is always displayed in row 1, a fixed location. Ex. 2169 ¶¶ 54, 56.

In the Fig. 2 GUI, “the user could place an order by clicking on a location (e.g., a cell) in one of the price or quantity columns.” Ex. 2169 ¶¶ 58–59. Patent Owner’s declarant Christopher Thomas testifies that

“[s]ome of such dynamic screens permitted single action order entry that consisted of a trader pre-setting a default quantity and then click (e.g., using a single-click or a double-click) on a dynamic screen to cause a trade order to be sent to the exchange at the pre-set quantity.” Ex. 1024 ¶ 7; Ex. 1025 ¶ 20.

Other types of conventional trading GUIs used order entry tickets to send trade orders to an electronic exchange. Ex. 2169 ¶ 50. An order entry ticket is “in the form of a window, with areas in which the trader could fill out parameters for an order, such as the price, quantity, an identification of the item being traded, buy or sell, etc.” *Id.*; *see also* Ex. 1001, 2:23–27, 2:39–43 (describing a trader manually entering trade order parameters).

The Mercury display is depicted in Figure 3 of the ’382 patent, which is reproduced below.

FIG. 3

SYCOM FGBL DEC99		BidQ	AskQ	Prc	LTQ
1009	E/W 10:48:44				
1010	L 3		104	99	
	R 5		24	98	
1011	720		33	97	
1012	X 10		115	96	
1013	0				
1014	10 1H		32	95	
	50 3H		27	94	
1007	S 0 W 24 1K 5H		63	93	
	S 0 W 7 CLR		45	92	
1015	X 10		28	91	
1016	17		20	90	10
1008	R 0 W 15 CXL	18		89	
	B 0 W 13 + -	97		88	
1017	NET 0	30		87	
1018	B 0 W 17 NET REAL	43		86	
1019		110		85	
		23		84	
1021		31		83	
		125		82	
		21		81	

Figure 3 of the '382 patent illustrates an example of the Mercury display with example values for trading a commodity including prices, bid and ask quantities relative to price, and trade quantities. The Mercury display includes a plurality of columns. Column 1005 is a static price axis, which includes a plurality of price values for the commodity. *See id.* At 7:59–61. Columns 1003 and 1004 are aligned with the static

price axis and dynamically display bid and ask quantities, respectively, for the corresponding price values of the static price axis. *See id.* at 7:58–59. The '382 patent explains that “[t]he exchange sends the price, order and fill information to each trader on the exchange” and that “[t]he physical mapping of such information to a screen grid can be done by any technique known to those skilled in the art.” *Id.* at 4:66–5:6. Column 1002 contains various parameters and information used to execute trades, such as the default quantity displayed in cell 1016. *See id.* at 8:41–66. A trader executes trades using the Mercury display by first setting the desired commodity and default parameters, such as default quantity. *See id.* at 9:41–44; Fig. 6, step 1302. Then, a trader can send a buy order or sell order to the market with a single action, such as clicking on the appropriate cell in column 1003 or 1004. *See id.* at 9:44–10:20; Fig. 6, steps 1306–1315.

Column 1001 displays the trader’s orders and the order status. *Id.* at 8:26–28. For example,

in cells 1008, the number next to the B indicates the number of the trader’s ordered lots that have been bought at the price in the specific row. The number next to the W indicates the number of the trader’s ordered lots that are in the market, but have not been filled—i.e., the system is working on filling the order.

Id. at 8:35–40. A trader can cancel an order by clicking on cell 1008. *See id.* at 11:19–32.

D. Illustrative Claim

Claims 1 and 17 are independent. Claim 1 is illustrative of the claimed subject matter and is reproduced below:

1. A method of canceling an order entered for a commodity at an electronic exchange, the method comprising:

receiving data relating to the commodity from the electronic exchange, the data comprising an inside market with a current highest bid price and a current lowest ask price currently available for the commodity;

setting a trade order parameter;

dynamically displaying by a computing device a first indicator at a first area corresponding to a first price level along a static price axis, the first indicator being associated with the current highest bid price for the commodity;

dynamically displaying by the computing device a second indicator at a second area corresponding to a second price level along the static price axis, the second indicator being associated with the current lowest ask price for the commodity;

updating the dynamic display of the first and second indicators such that at least one of the first and second indicators is moved relative to the static price axis to a different area corresponding to a different price level along the static price axis in response to the receipt of new data representing a new inside market;

displaying by the computing device an order entry region comprising a plurality of areas, each area corresponding to a price level along the static price axis and each area being selectable by a user input device so as to receive a command to send an order message based on the trade order parameter and the price level that corresponds with the selected area to the electronic exchange;

displaying by the computing device an entered order indicator at a location corresponding to a particular price level along the static price axis, the entered order indicator being associated with an order entered at the electronic exchange at the particular price level; and

receiving a single action command that selects the location associated with the entered order indicator so as to cancel the order at the electronic exchange.

Ex. 1001, 12:20–58.

II. ANALYSIS

A. Claim Construction

In a covered business method patent review, claim terms are given their broadest reasonable interpretation in light of the specification in which they appear and the understanding of others skilled in the relevant art. *See* 37 C.F.R. § 42.300(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). Applying that standard, we interpret the claim terms of the '382 patent according to their ordinary and customary meaning in the context

of the patent's written description. See *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms must be set forth with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

“single action”

Claims 1 and 17 both recite “receiving a single action command that selects the location associated with the entered order indicator.” Ex. 1001, 12:56–58, 14:55–57.

Petitioner contends that “single action” should be construed to be “any action by a user within a short period of time, whether comprising one or more clicks of a mouse button or other input device” as defined in the specification of the '382 patent. Pet. 17–18 (quoting Ex. 1001, 4:21–25).

Patent Owner states that Petitioner's proposed construction “is sufficient for these proceedings so long as the construction is limited to ‘an action by a user...’ or ‘one action by a user...’ because the claim itself specifically identifies that the action be a ‘single’ action.” PO Resp. 8 (emphasis omitted). Patent Owner argues that any other construction would not be reasonable because it would be contrary to the specification and the plain and ordinary meaning. *Id.*

A patentee may rebut the presumption that claim terms have ordinary and customary meaning by providing a definition of the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). As Petitioner points out, the '382 patent provides such a

definition. Pet. 17–18. The specification of the '382 patent states:

the specification refers to a single click of a mouse as a means for user input and interaction with the terminal display as an example of a single action of the user. While thus describes a preferred mode of interaction, the scope of the present invention is not limited to the use of a mouse as the input device or to the click of a mouse button as the user's single action. *Rather, any action by a user within a short period of time, whether comprising one or more clicks of a mouse button or other input device, is considered a single action of the user for the purposes of the present invention.*

Ex. 1001, 4:15–25 (emphasis added). As can be seen from the above, the '382 patent defines “single action,” with reasonable clarity, deliberateness, and precision, as “any action by a user within a short period of time, whether comprising one or more click of a mouse button or other input device.” *Id.* We, thus, construe “single action” according to its definition in the '382 patent. *In re Paulsen*, 30 F.3d at 1480.

Patent Owner's proposed construction is inconsistent with the definition in the '382 patent. The definition explicitly states that more than one click of a mouse button by a user is considered a “single action” for the purposes of the present invention. Ex. 1001, 4:15–21.

For the reasons given above, we construe “single action” to mean “any action by a user within a short period of time, whether comprising one or more clicks

of a mouse button or other input device” (Ex. 1001, 4:21–25).

Other Terms

We do not need to construe explicitly any other claim terms in order to resolve the issue before us. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed.Cir.1999) (Only terms which are in controversy need to be construed, and then only to the extent necessary to resolve the controversy.)

B. Covered Business Method Patent

Section 18 of the AIA³ provides for the creation of a transitional program for reviewing covered business method patents. Section 18 limits review to persons or their privies who have been sued or charged with infringement of a “covered business method patent,” which does not include patents for “technological inventions.” AIA §§ 18(a)(1)(B), 18(d)(1); *see* 37 C.F.R. § 42.302.

In compliance with 37 C.F.R. § 42.302(a), Petitioner certifies that it has been sued for infringement of the ’382 patent. Pet. 3. Patent Owner does not dispute this. *See generally* PO Resp.

Whether the ’382 Patent is a CBM Patent

Under § 18(a)(1)(E) of the AIA, we may institute a transitional review proceeding only for a CBM patent. A CBM patent is a patent that “claims a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or

³ Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284, 329 (2011) (“AIA”).

service, except that the term does not include patents for technological inventions.” AIA § 18(d)(1); *see also* 37 C.F.R. § 42.301 (defining “[c]overed business method patent” and “[t]echnological invention”). To determine whether a patent is eligible for a covered business method patent review, the focus is on the claims. *Secure Access, LLC v. PNC Bank N.A.*, 848 F.3d 1370, 1379 (Fed. Cir. 2017) (“It is the claims, in the traditional patent law sense, properly understood in light of the written description, that identifies a CBM patent.”). One claim directed to a CBM is sufficient to render the patent eligible for CBM patent review. *See id.* at 1381 (“[T]he statutory definition of a CBM patent requires that the patent have a claim that contains, however phrased, a financial activity element.”).

In our Institution Decision, we determined that the Petitioner had shown that the ’382 patent is a CBM patent. Inst. Dec. 9–12. Patent Owner urges us to reconsider our determination and find that the ’382 patent is not eligible for CBM review. *See* PO Resp. 88–89. We, however, are not apprised of any sufficient reason to change our original determination.

*Method or Corresponding Apparatus for Performing
Data Processing or Other Operations Used in the
Practice, Administration or Management of a
Financial Product or Service*

The statute defines a “covered business method patent” as “[a] patent that claims a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service.” AIA

§ 18(d)(1); see 37 C.F.R. § 42.301(a). A covered business method patent can be broadly interpreted to encompass patents claiming activities that are financial in nature. Transitional Program for Covered Business Method Patents—Definitions of Covered Business Method Patent and Technological Invention, 77 Fed. Reg. 48734, 48735 (Aug. 14, 2012); *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1338–41 (Fed. Cir. 2016) (determining that a patent was a covered business method patent because it claimed activities that are financial in nature); *Unwired Planet, LLC v. Google, Inc.*, 841 F.3d 1376, n. 5 (Fed. Cir. 2016) (stating that “we endorsed the ‘financial in nature’ portion of the standard as consistent with the statutory definition of ‘covered business method patent’ in *Blue Calypso*”), *Versata Development Group, Inc. v. SAP America, Inc.*, 793 F.3d 1306, 1324–25 (Fed. Cir. 2015) (“[The statute] on its face covers a wide range of finance-related activities.”).

A patent need have only one claim directed to a covered business method to be eligible for review. 77 Fed. Reg. at 48,736 (Response to Comment 8). We take claim 1 as representative.

Petitioner asserts that claim 1 is directed to a covered business method because it recites “a method of canceling an order entered for a commodity at an electronic exchange,” which is financial in nature. Pet. 4–5. As Petitioner points out, claim 1 recites steps displaying market information, including indicators of bids and asks in the market and sending a cancellation order to an electronic trading exchange. Pet. 4–5; Ex. 1001, 12:20–58.

Displaying market information and cancelling a trade order to an electronic exchange are activities that are financial in nature. A method for cancelling an order for a commodity on an electronic exchange is a method for performing data processing or other operations used in the practice, administration, or management of a financial product or service.

Patent Owner does not dispute that the '382 patent claims a method used for a financial product or service, but does dispute that the '382 patent claims data processing. *See* PO Resp. 88–89. Patent Owner's argument is based upon the assumption that "data processing" in the statute is interpreted according to the definition of "data processing" found in the glossary for class 705 of the United States Patent Classification System. *See id.* at 88. Patent Owner, however, does not sufficiently explain why this definition is controlling, as opposed to the plain meaning of "data processing." *See* Pet. 10–11 (quoting definitions of "data processing"). We, thus, are not persuaded that "data processing" as recited by the statute precludes data processing for the purpose of displaying the data. The '382 patent discloses processing market information for display on a client terminal and for sending an order to an exchange. *See e.g.*, Ex. 1001, 4:66–5:5 ("The present invention processes this information and maps it through simple algorithms and mapping tables to positions in a theoretical grid program..."). We, thus, are not persuaded that the '382 patent does not claim "performing data processing... used in the practice, administration, or management of a financial product or service" (AIA § 18(d)(1)).

In any event, the statute does not limit CBM patents to only those that claim methods for performing data processing used in the practice, administration, or management of a financial product or service. It includes methods for performing “other operations” used in the practice, administration, or management of a financial product or service. The statute states that the “other operations” are those that are “used in the practice, administration, or management of a financial product or financial service.” AIA § 18(d)(1). There appears to be no disagreement that the claimed method steps are operations used in the practice, administration, or management of a commodity or trading a commodity on an electronic exchange, e.g., a financial service. *See generally* PO Resp. 88–89. The ’382 patent, therefore, at least claims “other operations used in the practice, administration, or management of a financial product or financial service” (AIA § 18(d)(1)).

Patent Owner contends that the Legislative History confirms that the claimed invention is not a covered business method because “it [] states that GUI tools for trading are not the types of inventions that fall within CBM jurisdiction.” PO Resp. 90 (citing Ex. 2126, S5428, S5433).

Although the legislative history includes statements that certain novel software tools and graphical user interfaces that are used by the electronic trading industry worker are not the target of § 18 of the AIA (*see* Ex. 2126, S5428, S5433), the language of the AIA, as passed, does not include an exemption for user interfaces for commodities trading from covered business method patent review. Indeed, “the legislative

debate concerning the scope of a CBM review includes statements from more than a single senator. It includes inconsistent views....” *Unwired Planet*, 841 F.3d at 1381. For example, in contrast to the statements cited by Patent Owner, the legislative history also indicates that “selling and trading financial instruments and other securities” is intended to be within the scope of covered business method patent review. *See* Ex. 2126, S5432 (statements of Sen. Schumer); *see also id.* at S54636–37 (statements of Sen. Schumer expressing concern about patents claiming “double click”), 157 Cong. Rec. S1360 at S1364 (Mar. 8, 2011) (statements of Sen. Schumer explain that “method or corresponding apparatus” encompasses “graphical user interface claims” and “sets of instructions on storage media claims.”) “[T]he legislative history cannot supplant the statutory definition actually adopted.... The authoritative statement of the Board’s authority to conduct a CBM review is the text of the statute.” *Unwired Planet*, 841 F.3d at 1381. Each claimed invention has to be evaluated individually to determine if it is eligible for a CBM patent review. A determination of whether a patent is eligible for a CBM patent review under the statute is made on a case-by-case basis. 37 C.F.R. § 42.301(b).

For the reasons stated above, we are persuaded by Petitioner that the ’382 patent “claims a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service” and meets that requirement of § 18(d)(1) of the AIA.

Exclusion for Technological Inventions

Even if a patent includes claims that would otherwise be eligible for treatment as a covered business method, review of the patent is precluded if the claims cover only “technological invention[s],” as defined by 37 C.F.R. § 42.301(b). The definition of “covered business method patent” in § 18(d)(1) of the AIA does not include patents for “technological inventions.” To determine whether a patent is for a technological invention, we consider the following: “whether the claimed subject matter as a whole [(1)] recites a technological feature that is novel and unobvious over the prior art; and [(2)] solves a technical problem using a technical solution.” 37 C.F.R. § 42.301(b). Both prongs must be satisfied in order for the patent to be excluded as a technological invention. *See Versata*, 793 F.3d at 1326–27; *Apple Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1240 (Fed. Cir. 2016). The following claim drafting techniques, for example, typically do not render a patent a “technological invention”:

- (a) Mere recitation of known technologies, such as computer hardware, communication or computer networks, software, memory, computer-readable storage medium, scanners, display devices or databases, or specialized machines, such as an ATM or point of sale device.
- (b) Reciting the use of known prior art technology to accomplish a process or method, even if that process or method is novel and non-obvious.

- (c) Combining prior art structures to achieve the normal, expected, or predictable result of that combination.

Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,763–64 (Aug. 14, 2012). The Federal Circuit has held that a claim does not include a “technological feature” if its “elements are nothing more than general computer system components used to carry out the claimed process.” *Blue Calypso*, 815 F.3d at 1341; *see also Versata*, 793 F.3d at 1327 (“the presence of a general purpose computer to facilitate operations through uninventive steps does not change the fundamental character of an invention”).

With respect to the first prong, Petitioner contends that rather than reciting a technical feature that is novel or unobvious over the prior art, the claims of the ’382 patent generally recite trading software that is implemented on a conventional computer. Pet. 6–8. When addressing “whether the claimed subject matter as a whole recites a technological feature that is novel and unobvious over the prior art,” Patent Owner alleges that Petitioners fail to address whether the claims recite a technical feature that is novel and unobvious. PO Resp. 89. That is incorrect. *See* Pet.6–8; Inst. Dec. 11 (discussing Petitioner’s contention).

We are persuaded by Petitioner’s contentions that at least claim 1 of the ’382 patent does not recite a novel and non-obvious technological feature. Pet. 6–8. The specification of the ’382 patent treats as well-known all potentially technological aspects of the claims. For example, the ’382 patent discloses that its system can be implemented “on any existing or future

terminal or device” (Ex. 1001, 4:11–14), each of which is known to include a display, and discloses that the input device can be a mouse (*id.* at 4:18–21), which is a known input device. The ’382 patent further discloses that “[t]he scope of the present invention is not limited by the type of terminal or device used.” *Id.* at 4:14–15. The ’382 patent also describes the programming associated with the GUI as insignificant. *See, e.g., id.* at 4:67– 5:7 (explaining that the “present invention processes [price, order, and fill] information and maps it through simple algorithms and mapping tables to positions in a theoretical grid program” and “[t]he physical mapping of such information to a screen grid can be done by any technique known to those skilled in the art”). That at least claim 1 of the ’382 patent does not recite a novel and non-obvious technological feature is further illustrated by our discussion of the prior art and Fig. 2 GUI above. Accordingly, we are persuaded that at least claim 1 does not recite a technological feature that is novel and unobvious over the prior art.

With respect to the second prong, Petitioner asserts that the claims of the ’382 patent do not fall within § 18(d)(1)’s exclusion for “technological inventions” because the ’382 patent does not solve a technical problem using a technical solution. Pet. 8–9. Petitioner notes that “[a]ccording to the ’382 patent, the ‘problem’ with prior art trading GUIs was that the market price could change before a trader entered a desired order, causing the trader to ‘miss his price.’” *Id.* at 8 (citing Ex. 1001, 2:61–3:2). Petitioner contends that the ’382 patent’s solution is not technical because Patent Owner “merely [] rearrange[d] the way that the market date is displayed” and “did not

design a more accurate mouse or a computer that responded faster.” *Id.* at 8–9. Patent Owner disagrees and asserts that the ’382 patent solves the technical problems of “a user missing their intended price, along with the problems of visualizing information in multiple windows, and managing entered orders.” PO Resp. 89–90. Patent Owner points to *CQG* for support. *Id.*

We are persuaded that the ’382 patent does not solve a technical problem with a technical solution. Pet. 8–9. The ’382 patent purports to solve the problem of a user missing an intended price because a price changed as the user tried to enter a desired order. *See* Ex. 1001, 2:2–62. As written, claim 1 requires the use of only known technology. Given this, we determine that at least claim 1 does not solve a technical problem using a technical solution and at least claim 1 does not satisfy the second prong of 37 C.F.R. § 42.301(b).

The ’382 patent describes the problem it solves as follows:

[A]pproximately 80% [of the total time it takes to place an order] is attributable to the time required for the trader to read the prices displayed and to enter a trade order. The present invention provides a significant advantage during the slowest portion of the trading cycle—while the trader *manually enters his order*....

In existing systems, multiple elements of an order must be entered prior to an order being sent to market, which is time consuming for the

trader. Such elements include the commodity symbol, the desired price, the quantity and whether a buy or sell order is desired. The more time a trader takes entering an order, the more likely the price on which he wanted to bid or offer will change or not be available in the market.... In such liquid markets, the prices of the commodities fluctuate rapidly. On a trading screen, this results in rapid changes in the price and quantity fields within the market grid. If a trader intend to enter an order at a particular price, but misses the price because the market prices moved before he could enter the order, he may lose hundreds, thousands, even millions of dollars. The faster a trader can trade, the less likely it will be that he will miss his price and the more likely he will make money.

Ex. 1001, 2:40–3:2 (emphasis added). “The inventors have developed the present invention which overcomes the drawbacks of the existing trading systems and dramatically reduces the time it takes for a trader to place a trade when electronically trading on an exchange.” *Id.* at 3:6–9.

As can be seen from the above, a problem disclosed in the '382 patent is the time it takes for a trader to *manually* enter trader orders on a market or exchange that is rapidly changing, so as to make a profit. This is a financial issue or a business problem, not a technical problem. *See* Pet. 5–7. If the market or exchange did not rapidly change, then there would be no need for a trader to enter orders rapidly.

The '382 patent also describes that “the present invention ensure[s] fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuate.” Ex. 1001, 7:21–24. Claim 1, however, does not require displaying the market depth. *See id.* at 12:26–12:36. Claim 1 only requires displaying a first indicator that represents a quantity associated with the highest bid price and a second indicator that represents a quantity associated with the lowest ask price. *Id.* In other words, claim 1 only requires displaying indicators that correspond to the inside market. *See also id.* at 5:8–14 (disclosing displaying on the inside market and not the market depth). The subject matter of claim 1, thus, does not require the alleged technical solution to the problem of ensuring fast and accurate trades.

The '382 patent also describes that the Mercury display “provides an order entry system, market grid, and fill window and summary of market orders in one simple window” and that “such a condensed display materially simplifies the trading system by entering and tracking trades in an extremely efficiently manner.” *Id.* at 7:42–46. Claim 1 only requires displaying the inside market and an entered order indicator, and does not require displaying the inside market or entered order indicator in “one simple window.” *See id.* at 12:26–12:36. Displaying market information is not a technical problem and, for the same reasons as discussed above, claim 1 does not recite a technical solution.

We are persuaded by Petitioner that at least claim 1 does not recite a technological feature that is novel and unobvious over the prior art and does not solve a technical problem using a technical solution. Accordingly, we determine that the '382 patent is not for a technological invention.

Conclusion

In view of the foregoing, we conclude that the '382 patent is a covered business method patent under AIA § 18(d)(1) and is eligible for review using the transitional covered business method patent program.

C. Section 101 Patent-Eligible Subject Matter

Petitioner challenges claims 1–32 as directed to patent-ineligible subject matter under 35 U.S.C. § 101. Pet. 19–36.

Under 35 U.S.C. § 101, we must first identify whether an invention fits within one of the four statutorily provided categories of patent-eligibility: “processes, machines, manufactures, and compositions of matter.” *Ulramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 713–14 (Fed. Cir. 2014).

Initially, we note that Petitioner asserts that claims 17–32 are “broad enough to encompass a transitory, propagating signal that is encoded, which is not eligible for patenting.” Pet. 36 (citing *In re Nuijten*, 550 F.3d 1346, 1357 (Fed. Cir. 2007)). For example, claim 17 recites “[a] computer readable medium having program code recorded thereon.” Ex. 1001, 13:45–46. Petitioner contends that “[u]nder the broadest reasonable interpretation (‘BRI’), the scope of this term is broad enough to encompass a transitory, propagating signal that is encoded.” Pet. 18–19

(citing *Ex Parte Mewherter*, 107 USPQ2d 1857, 1859–60 (PTAB 2013) (Precedential)). Petitioner explains that the specification neither defines this term nor provides examples. *Id.* In our Institution Decision, we made an initial determination that the broadest reasonable interpretation of “computer readable medium having program code recorded thereon” is “any medium that participates in providing instruction to a processor for execution and having program code recorded thereon.” Inst. Dec. 9. Patent Owner responds that there is no evidence to support Petitioner’s contention that one skilled in the art would have understood “computer readable medium having program code recorded thereon” to encompass a signal at the time of the invention. PO Resp. 87. Petitioner responds to Patent Owner’s contentions by asserting that claims 17–32, “which recite a term of art in patent law, encompass transitory signals and are thus non-statutory.” Pet. Reply 11.

Petitioner’s response is unhelpful. For example, in its Reply, Petitioner cites no evidence to sufficiently rebut Patent Owner’s contentions regarding how one skilled in the art would have understood “computer readable medium having program code recorded thereon,” at the time of the invention.

Accordingly, on this record, which is absent any further evidence or meaningful argument from Petitioner, we are not persuaded that at the time of the invention one skilled in the art would have understood “computer readable medium having program code *recorded* thereon” as encompassing transitory, propagating signals.

There is no dispute that the remaining claims fit within one of the four statutorily provided categories of patent-eligibility. Even if claims 17–32 were to fit within one of the categories of patent-eligibility, we are persuaded that they do not recite patent-eligible subject matter for the reasons that follow.

D. Eligibility

Patent-eligible subject matter is defined in § 101 of the Patent Act, which recites:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

There are, however, three judicially created exceptions to the broad categories of patent-eligible subject matter in § 101: laws of nature, natural phenomena, and abstract ideas. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l.*, 134 S. Ct. 2354 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012). Although an abstract idea, itself, is patent-ineligible, an application of the abstract idea may be patent-eligible. *Alice*, 134 S. Ct. at 2355. Thus, we must consider “the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Id.* (citing *Mayo*, 132 S. Ct. at 1297–98). The claim must contain elements or a combination of elements that are “sufficient to ensure that the patent in practice amounts to

significantly more than a patent upon the [abstract idea] itself.” *Id.* (citing *Mayo*, 132 S. Ct. at 1294).

Claims 1 and 17 are independent and recite similar limitations. We take claim 1 as representative.

Abstract Idea

“The ‘abstract idea’ step of the inquiry calls upon us to look at the ‘focus of the claimed advance over the prior art’ to determine if the claim’s ‘character as a whole’ is directed to excluded subject matter.” *Affinity Labs of Texas v. DirectTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016) (quoting *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016); see also *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016).

According to Petitioner, the claims are directed to the abstract idea of “placing an order based on observed (plotted) market information, as well as updating market information.” Pet. 21. Petitioner argues, “[a] POSA would understand canceling an order is a type of order (or command) sent to the electronic exchange.” *Id.* at 19 (citing Ex. 1003 ¶ 92). Petitioner contends, “claim 1 could be performed in the human mind or with the aid of pen-and-paper with little difficulty because the claim requires plotting only a few data points” (*id.* at 22–24 (citing Ex. 1010)) and that the claims are directed to commodity trading which is ‘a fundamental economic practice long prevalent in our system of commerce.’” Pet. Reply 4 (citing *Alice*, 134 S. Ct. at 2356). Patent Owner disagrees. See PO Resp. 77–85.

Claim 1 of the '382 patent recites “a method of canceling an order entered for a commodity at an electronic exchange.” Ex. 1001, 12:21–22. Claim 1 recites steps of displaying market information, bid and ask quantities, and an entered order indicator in regions along a static price axis. *Id.* at 12:23–43, 12:51–55. The market information is an indicator of an order to buy at the highest bid price and an indicator of an order to sell at the lowest ask price. *Id.* In other words, the displayed market information is the inside market. *Id.* at 4:63–65, 12:24–26. Claim 1 does not require displaying the market depth. *See id.* at 5:8–14 (disclosing that only the inside market may be displayed). Claim 1 also recites a step of updating the market information such that it moves relative to the price axis as the market changes. *Id.* At 12:37–43. Claim 1 further recites a step of displaying an order entry region with areas selectable so as to receive a command to send a message to the electronic exchange, a step of setting a parameter for a trade order, and a step of receiving a single action command so as to cancel the order. *Id.* at 12:26, 12:43–57.

As can be seen from its steps, the focus of claim 1 is placing trade orders (i.e., cancellation orders) based on displayed market information, as well as updating the displayed market information. This focus is consistent with the '382 patent's statement that “[t]he present invention is directed to the electronic trading of commodities.... It facilitates the display of and the rapid placement of trade orders....” *Id.* at 1:18–24. The focus of claim 1 is also consistent with the problem disclosed by the '382 patent of a trader missing an intended price because the market changed during

the time required for a trader to read the prices displayed and to manually enter an order. *Id.* at 2:17–3:2.

Claim 1 does not recite any limitation that specifies how the computer implements the steps or functions. For example, claim 1 recites displaying an arrangement of the market information. A first indicator, associated with the current highest bid price, is displayed at a first area corresponding to a first price level. *Id.* at 12:28–32. Claim 1 does not specify how the computer maps the indicators or price levels to the display. The '382 patent does not disclose an unconventional or improved method of mapping the first indicators, second indicators, and price axis to the display. It states that “[t]he physical mapping of such information to a screen grid can be done by any technique known to those skilled in the art” and that “[t]he present invention is not limited by the method used to map the data to the screen.” *Id.* at 5:4–7.

The '382 patent discloses that at least 60 exchanges throughout the world utilize electronic trading and discloses that it is known that electronic trading includes analyzing displayed market information and updated market information to send trade orders to an exchange. *See id.* at 1:28–2:28. Similarly, Mr. Thomas indicates that traders in prior trading systems, including pre-electronic open outcry systems, which have been used for over one hundred years, send trade orders to an exchange based on price, such as the inside market prices or other prices. Ex. 2169 ¶¶ 36, 62, and 63. Mr. Thomas testifies that:

[i]n the trading pit, traders utilize shouting and hand signals to transfer information about

buy and sell orders to other traders. To avoid confusion, the inside market prices were the focus, and traders could only shout and signal regarding their interest at the best bid/offer or at prices that improves the best bid/offer.

Id. ¶ 36. The '382 patent discloses that electronic exchanges are known to provide the market depth for display that is the inside market and a few orders away from the inside market. Ex. 1001, 5:11–12. Further, Exhibit 1010 discloses that long before the '382 patent traders maintained books that plotted bids and asks (e.g., the market depth) along a price axis. *See* Ex. 1010, 44–46. Exhibit 1010 states “[s]pecialists enter public orders, that are away from the market, in their books by price and in the order they are received.” *Id.* at 44. Figure 4-2 of Exhibit 1010 is reproduced below.

FIGURE 4-2. A page in the specialist's book.

BUY		SELL
BKR R - 100	22	
BKR L - 300	1/8	
BKR A - 500		
BKR D - 200	1/4	
BKR E - 300		
	3/8	
	1/2	
	5/8	BKR F - 300 BKR G - 600
	3/4	BKR B - 100 BKR M - 200
	7/8	BKR S - 400

Figure 4-2 depicts a page of a book of a trader. *Id.* at 44–45. Orders to buy or sell a commodity are plotted along a prices axis. For example, Figure 4–2 shows the best bid at $22\frac{1}{4}$ and the best ask at $22\frac{5}{8}$. *Id.* at 44. Exhibit 1010 states: “The NYSE specialist’s book is maintained on a CRT and referred to as a *display book*. This electronic book sorts all orders coming to the specialist in time and price sequence....” *Id.* at 46.

Given this, we determine that placing an order based on displayed market information, such as the

inside market and a few other orders, as well as updating the market information, is a fundamental economic and conventional business practice. We are persuaded by Petitioner that the method of claim 1 could be performed in the human mind or with the aid of pen-and-paper with little difficulty because the claim requires plotting only a few data points (i.e., the inside market). *See* Pet. 22–24 (citing Ex. 1010, 44–46; Ex. 1003 ¶¶ 73–75).

Patent Owner argues that the claims of the '382 patent are not directed to a fundamental economic practice, longstanding commercial practice, or business method. *See* PO Resp. 76–85. Patent Owner contends the “claims did not have a pre-electronic equivalent as electronic trading operates in fundamentally different ways from open outcry.... In open outcry, trader could not publish orders away from the inside market, and could pick and choose with whom they wanted to trade.” *Id.* at 83 (citations omitted). Patent Owner’s arguments are unpersuasive because they are not commensurate with the scope of the claims. Claim 1 does not recite any steps as to how the electronic exchange matches or fills the order. Claim 1 requires publishing the inside market and does not require publishing the market depth. *See* Ex. 1001, 12:22–25; *see also id.* at 5:8–14. Claim 1 does not specify how the order is filled at the electronic exchange or preclude a trader from picking and choosing with whom they want to trade.

The claims at issue here are like the claims at issue in *Affinity Labs*. In *Affinity Labs*, the claim at issue recited an application that enabled a cellular telephone to present a GUI displaying a list of media

sources that included selectable items for selecting a regional broadcasting channel. *Affinity Labs*, 838 F.3d at 1255–56. The claim also recited that the cellular telephone was enabled to transmit a request for the selected regional broadcasting channel. *Id.* at 1256. The claims at issue here are also like the claims at issue in *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229 (Fed. Cir. 2016). See Pet. Reply 7–8. In *Ameranth*, the claim at issue recited a GUI that displayed menu items in a specific arrangement, a hierarchical tree format. Menu items were selected to generate a second menu from a first menu. *Ameranth*, 842 F.3d at 1234. In both *Affinity Labs* and *Ameranth*, the court determined that the claims were not directed to a particular way of programming or designing the software, but instead merely claim the resulting systems. The court thus determined that the claims were not directed to a specific improvement in the way computers operate. *Affinity Labs*, 838 F.3d at 1260–61; *Ameranth*, 842 F.3d at 1241. Here, the claims also recite the resulting GUI and are not directed to specific improvements in the way the computers operate. “Though lengthy and numerous, the claims [that] do not go beyond requiring the collection, analysis, and display of available information in a particular field, stating those functions in general terms, without limiting them to technical means for performing the functions that are arguably an advance over conventional computer and network technology” are patent ineligible. *Elec. Power Grp.*, 830 F.3d at 1351. “Generally, a claim that merely describes an ‘effect or result dissociated from any method by which [it] is accomplished’ is not directed to patent-eligible subject matter.” *Ameranth*, 842 F.3d

at 1244 (quoting *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1348 (Fed. Cir. 2015)).

The claims of the '382 patent are unlike the claims at issue in *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014) and *Enfish*. See Pet. 31–35; Pet. Reply 5–6. In *DDR Holdings*, the court determined that the claims did not embody a fundamental economic principle or a longstanding commercial practice. The claims at issue in *DDR Holdings* were directed to retaining website visitors, which the court determined was a problem “particular to the Internet.” *DDR Holdings*, 773 F.3d at 1257. The court also determined that the invention was “necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks” and that the claimed invention did not simply use computers to serve a conventional business purpose. *Id.* In *Enfish*, the claim at issue was directed to a data storage and retrieval system for a computer memory. *Enfish*, 822 F.3d at 1336–37. The court determined that the claims were directed to an improvement in the functioning of a computer and were not simply adding conventional computer components to well-known business practices. *Id.* at 1338. Here, in contrast, claim 1 is directed to a fundamental economic principle or a longstanding commercial practice and not directed to an improvement in the computer, but simply to the use of the GUI in a method of placing an order based on displayed market information, as well as updating market information.

Patent Owner argues that the claims of the '382 patent solve the problems of “(1) unpredictable changes in the market could cause the user to miss

their intended price and (2) trading information was presented in separate windows, creating challenges with visualization and order management.” See PO Resp. 80–81. Patent Owner contends that the ’382 patent solves this problem “with a specific way via the claimed new GUI construction...that condenses three windows into one.” *Id.* at 80. In the Patent Owner Response, Patent Owner does not specify which elements of claim 1 solve these problems. *See id.* at 80–81. Claim 1 does not recite any limitation that specifies how the computer implements the steps or functions. “Generally, a claim that merely describes an ‘effect or result dissociated from any method by which [it] is accomplished’ is not directed to patent-eligible subject matter.” *Ameranth*, 842 F.3d at 1244 (quoting *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1348 (Fed. Cir. 2015)). Rearranging the display of data is not enough to confer patent eligibility. *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1370 (Fed. Cir. 2011) (holding “[t]he mere collection and organization of data” patent-ineligible).

Further, claim 1 of the ’382 patent is unlike the claims at issue in *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299 (Fed. Cir. 2016). In *McRO*, the court held that claims that recited “a specific asserted improvement in computer animation” were not directed to an unpatentable abstract idea because they go “beyond merely organizing existing information into a new form or carrying out a fundamental economic practice.” *McRO*, 837 F.3d at 1314–15. Here, the claims merely organize existing market information so that it is displayed or plotted along a price axis. Plotting bids and asks along a price axis is

not a specific improvement to the functioning of a computer. *See Ex.* 1010, 44–46.

Patent Owner argues that the claims of the '382 patent are patent eligible under *CQG* because the '382 patent is a continuation of the patents at issue in *CQG*. PO Resp. 76–77. The claims of the '382 patent, however, are broader in some aspects than the claims of the '132 patent. For example, claim 1 of the '382 patent does not recite the single action order entry feature in combination with a single price axis of the '132 patent. *See Tr.* 74:3–78:54 (indicating that “[o]rder entry is different than cancellation” from the standpoint of having the same concerns with quantities changing and prices changing when entering a new order”). In *CQG*, the Federal Circuit referred to even those narrower claims as presenting a “close question[] of eligibility.” *CQG* at 1006. Thus, comparing the claims of the patents involved in *Trading Technologies* is not particularly helpful here. *See also* Pet. Reply 8–10.

Inventive Concept

Next we turn to “the elements of each claim both individually and as an ordered combination” to determine whether the additional elements “transform the nature of the claim” into a “patent-eligible application.” *Mayo*, 768 S. Ct. at 1297–98. The additional elements must be more than “well-understood, routine, conventional activity.” *Id.* at 1298.

Petitioner contends that claim 1 does not recite an inventive concept. Pet. 20–25; Pet. Reply 7–8. Patent Owner disagrees. PO Resp. 85–87.

As noted above, the specification of the '382 patent treats as well-known all potentially technical aspects of the claims. For example, the '382 patent discloses that its system can be implemented “on any existing or future terminal or device” (Ex. 1001, 4:11–14), each of which is known to include a display, and discloses that the input device can be a mouse (*id.* at 4:18–21), which is a known input device. The '382 patent further discloses that “[t]he scope of the present invention is not limited by the type of terminal or device used.” *Id.* at 4:14–15. The '382 patent also describes the programming associated with the GUI as insignificant. *See, e.g., id.* at 4:67– 5:7. A mere requirement of a GUI does not make the claim patent eligible. *See Affinity Labs*, 838 F.3d at 1257–58; *Ameranth*, 842 F.3d at 1236–1242; *Internet Patent Corp.*, 790 F.3d at 1348–1349. A recitation of a generic GUI merely limits the use of the abstract idea to a particular technological environment. “Limiting the field of use of the abstract idea to a particular existing technological environment does not render any claims less abstract.” *Affinity Labs*, 838 F.3d at 1258 (citing *Alice*, 134 St. Ct. at 2358; *Mayo*, 132 S. Ct. at 1294).

Claim 1 recites steps of displaying indicators representing a quantity associated with a highest order to buy the commodity or lowest order to sell the commodity in a bid display region or ask display region, respectively, and moving the indicators upon receipt of market information. Ex. 1001, 12:23–43. Locations in the bid or ask display region correspond to a price level along a static price axis. *Id.* Essentially, these limitations require plotting the inside market along a price axis. Plotting information along an axis is a well-understood, routine, conventional, activity. *See*

Ex. 1010, 44–46. The Fig. 2 GUI includes regions for displaying indicators of bid and ask quantities and regions for displaying corresponding prices. For example, the Fig. 2 GUI displays the bid quantity in BidQty column 202 at locations that correspond to the bid prices in BidPrc column 203. Ex. 1001, 5:15–32. This is akin to plotting information BidQty and AskQty along a price axis. Further, Mr. Thomas testifies that prior GUIs, which are similar to the Fig. 2 GUI, “displayed the locations for the best bid and ask prices such that the prices were displayed vertically (e.g., with the location for the best ask price being displayed above the location for the best bid price).” Ex. 2169 ¶ 62; *see also* Ex. 1010, 42–44. Displaying the best ask price above a best bid price would be displaying a common column of price levels. The ’382 patent, states “[t]he physical mapping of such information to a screen grid can be done by any technique known to those skilled in the art” and that “[t]he present invention is not limited by the method used to map the data to the screen.” *Id.* at 5:4–7. These steps of claim 1 require merely a rearrangement of market information that was known to be displayed in corresponding columns on a GUI. *CyberSource Corp.*, 654 F.3d at 1370 (holding “[t]he mere collection and organization of data” patent-ineligible).

Claim 1 further recites a step of displaying an order entry region with areas selectable so as to receive a command to send a message to the electronic exchange, a step of setting a parameter for a trade order, and a step of receiving a single action command so as to cancel the order. *Id.* at 12:26, 12:46–56. Methods that permit single action entry of an order, which has preset default parameters, by clicking on a cell in a

display of a GUI are known technology. Ex. 1024 ¶ 7; Ex. 1025 ¶ 20; Ex. 2169 ¶¶ 58–59. The additional elements must be more than “well-understood, routine, conventional, activity.” *Mayo*, 132 S. Ct. at 1298.

The individual elements of the claim do not transform the nature of the claim into a patent-eligible application. They do not add significantly more to the abstract idea or fundamental economic practice. Contrary to Patent Owner’s argument, the claim simply requires the use of a generic GUI with routine and conventional functions. Even considering all of the elements as an ordered combination, the combined elements also do not transform the nature of the claim into a patent-eligible application. Indeed, as discussed above, the Fig. 2 GUI disclosed in the ’382 patent includes a similar combination of elements.

For the reasons discussed above, the claims 1 and 17 of the ’382 patent are not directed to patent eligible subject matter under 35 U.S.C. § 101.

Dependent Claims

Petitioner contends that the additional elements recited by dependent claims 2–16 and 18–32 do not add significantly more to the abstract idea so as to render the claims patent-eligible. Pet. 29–31. Patent Owner makes no arguments directed to the eligibility of the dependent claims. *See generally* PO Resp. We are persuaded by Petitioner that dependent claims 2–16 and 18–32 are patent ineligible under 35 U.S.C. § 101. *See* Pet. 19–31.

Patent Eligibility Conclusion

Having considered the information provided in the Petition, we are persuaded that Petitioner has

demonstrated that claims 1–32 of the ’382 patent are unpatentable under 35 U.S.C. § 101.

E. Obviousness

Section 103 forbids issuance of a claim when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103. The ultimate determination of obviousness under § 103 is a question of law based on underlying factual findings. *In re Baxter Int’l, Inc.*, 678 F.3d 1357, 1362 (Fed. Cir. 2012) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1996)). These underlying factual considerations consist of: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of non-obviousness such as “commercial success, long-felt but unsolved needs, failure of others, etc.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting *Graham*, 383 U.S. at 17–18).

Petitioner challenges claims 1–32 as obvious over TSE and Belden. Pet. 36–70; Pet. Reply 14–19.

Overview of TSE

TSE is a guide for operating a trading terminal of the Tokyo Stock Exchange. Ex. 1005, 1⁴. The trading

⁴ We refer to the pagination inserted into Exhibit 1005 and not the original pagination.

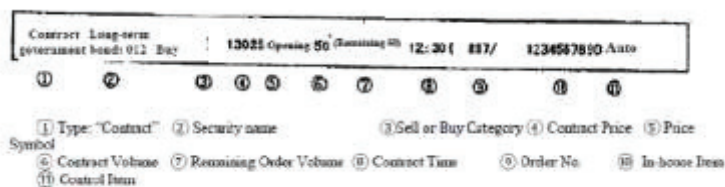
terminal displays a GUI for depicting market information on a Board/Quotation Screen (*see id.* at 107). The Figure on page 107 of TSE is reproduced below.

①		②		③		④		⑤		⑥	
01	Long-term government bonds	012	Base	13298							
④ K13320 (13:17) (2012)					▲	H	▼				
⑧ 10	250	Closing	250	⑧ 15	Prev/Next	⑩					
⑨ Caution		Market	10	1	0	13291					
	157	1810	OVER			(9:05)					
2	1	3	13029		H	13320					
2	4	132	13028			(9:46)					
	4	145	13027		L	13274					
	2	70	13026			(9:10)					
5	2	29	13025		P	13310					
	1	20	13024			(13:16)					
	1		13023 # ⑮		5	(2021)					
			13022		C	+13					
10			13021		V	42588					
			13020K ⑮								
			13019	17	3	L3 13005 ⑮					
			13018	47	1	(13:14)					
			13017	5	6	L4 13008					
			13016	36	3	(13:15)					
			13015	44	6	2 L3 13009					
			13014	46	2	(13:15)					
			13013	123	5	L2 13008					
			13012	141	3	(13:16)					
			13011	2	4	L1 13009					
			13010	817	3	(13:16)					
			UNDER	6084	159	W 5 ⑰					

The Figure depicts the Board/Quotation Screen including a central order price at column 11. *Id.* at 111. To the left and right of order price column 11, are ask and bid orders in respective columns 12 and 13. *Id.*

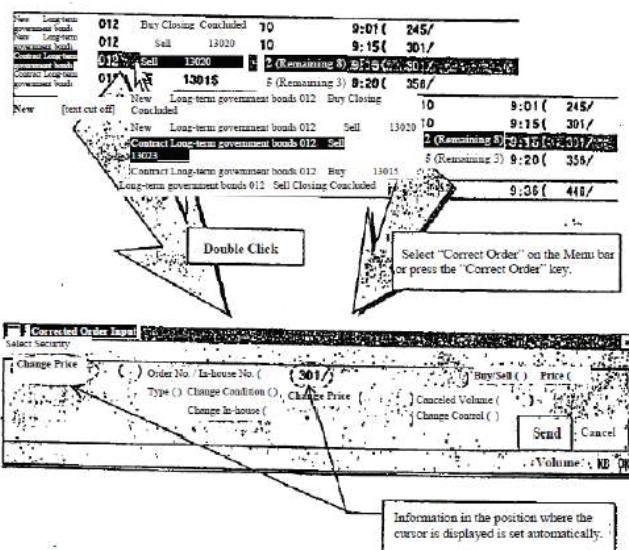
App. 192

TSE discloses that a Notice Display Area is displayed at the bottom of the screen. *Id.* at 121. The Notice Display Area displays displayed different types of notices, such as Order Received Notices and Contract Concluded Notices. *Id.* at 122, 126. A Figure appearing on page 132 of TSE is reproduced below.



The Figure depicts an example of a Contract Conclude Notice, which indicates an order entered by a trader and the status of the order. *Id.* at 126.

A Figure appearing on page 126 of TSE is reproduced below.



The Figure depicts a Corrected Order Input Window. A trader can modify or cancel an order by double-clicking on a notice in the Notice Display Area, which opens the Corrected Order Input Window. *See id.* at 132, 137–138, 155–159, 162. Information, such as the name of the security and order number is automatically set and cancellation is indicated by setting the revision type to “1.” *Id.* at 132, 158, 163. The cancellation is sent to the exchange by clicking on the “send” button. *Id.* at 164.

Overview of Belden

Belden is titled “Simulated Live Market Trading System” and published on October 4, 1990. Ex. 1008, (54), (43). Belden discloses an electronic trading system for trading commodities, which has a display with icons representing active trades. *Id.* at 26–27.⁵ Belden discloses that “[t]rading is done by using the mouse to move a cursor onto the icon of a trader and pushing a button, i.e., ‘clicking’ on the icon.” *Id.* at 12. Belden discloses that a trader “benefits from the speed with which he can take or liquidate positions.” *Id.* at 4. Belden also teaches canceling a trade by “point[ing] and click[ing] your bid icon...with a mouse.” *Id.* at 37–38.

Analysis

Petitioner proposes two alternative combinations of TSE and Belden to teach the limitations of claims

⁵ We refer to the pagination inserted into Exhibit 1012 and not the original pagination.

1 and 17. Pet. 36–61; Tr. 16:1–8. In both combinations, Petitioner argues that TSE teaches most of the limitation of claim 1 and 17. *Id.*

With respect to Petitioner’s first combination, Petitioner relies upon the bids and asks displayed in columns 12 and 13 of TSE’s Board Screen as teaching the step of displaying an entered order indicator at a location corresponding to a particular price level along the static price axis. *Id.* at 54–55. Petitioner acknowledges that TSE does teach the step of receiving a single action command that selects the location associated with the entered order indicator to cancel the order. *See id.* at 57–58. Petitioner relies upon Belden to teach a single-action order technique and argues, “a POSA would have been motivated to incorporate Belden’s single-action order techniques in TSE’s electronic trading system to achieve the predictable and desirable results of reducing the time needed to cancel an order and reduce operator error.” *Id.* at 60–61 (citing Ex. 1003 ¶ 133); *see also* Pet. 42–43, Pet. Reply 15–16,

Patent Owner disagrees. *See* PO Resp. 23–32. Patent Owner argues “TSE does not teach cancelling of entered orders at areas corresponding to price levels along the static price axis” because in TSE cancels orders by double clicking in the Notice Display Area to pull up a Corrected Order Input Window. *Id.* at 27.

In a covered business method patent review, Petitioner has the burden of proving by a preponderance of the evidence of unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 326(e); *see also In re Magnum Oil Tools Int’l, Ltd.*, 892 F.3d 1364, 1375 (Fed. Cir. 2016) (holding that because “petitioner...bears the burden

of proof,” the Board is not “free to adopt arguments on behalf of petitioners that...were not[] raised” and “must base its decision on arguments that were advanced by [petitioner], and to which [patent owner] was given a chance to respond”). “To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *Magnum Oil Tools*, 892 F.3d at 1380 (citing *KSR*, 550 U.S. at 418).

Upon review of Petitioner’s evidence and analysis, we determine that Petitioner has not shown by a preponderance of the evidence that it would have been obvious to one of ordinary skill in the art to modify TSE, given the teachings of Belden, to cancel a user’s entered order at an exchange by selecting one of the bids or asks in columns 12 or 13 of TSE’s Board Screen with a single action. The bids and asks displayed on TSE’s Board Screen represent the aggregate bids and asks in the market. Ex. 1005, 137 (showing order count in column 13 of the figure depicting the Board Screen). TSE does not disclose canceling an order by selecting the bids or asks displayed on the Board Screen. TSE discloses canceling an order by selecting a notice in the Notice Display Area. *See id.* at 132, 137–138, 155–159, 162. Petitioner does not sufficiently explain why one of ordinary skill in the art would modify TSE to cancel an order by selecting a bid or ask on the Board Screen instead of selecting a notice in the Notice Display Area.

Petitioner argues that Belden discloses canceling a user’s order by clicking an icon representing a user’s

order, which is allegedly at a location corresponding to a particular price level. Pet. 58–59. Petitioner argues that one of ordinary skill in the art “would have found it obvious to add Belden’s single-action order technique to TSE’s electronic trading system” in order to reduce the time needed to cancel an order and reduce operator error. *Id.* at 59–61 (citing Ex. 1003 ¶¶ 131–133); *see also* Pet. 42–43 (citing Ex. 1003 ¶¶ 96–98); Pet. Reply 15–16. Reducing the time needed to cancel an order and reducing operator error may explain why it would have been obvious to replace TSE’s Corrected Order Input Window with single-action order entry. It, however, does not explain sufficiently why one of ordinary skill in the art would cancel an order by selecting a bid or ask on the Board Screen instead of selecting a notice in the Notice Display Area. The cited paragraphs of Mr. Román’s testimony substantially repeat the arguments in the Petition and do not provide a sufficient explanation. *See* Ex. 1003 ¶¶ 96–98, 131–133.

For this reason, we determine that Petitioner has not shown by a preponderance of the evidence that it would have been obvious to one of ordinary skill in the art to modify TSE, given the teachings of Belden, to cancel a user’s entered order at an exchange by selecting one of the bids or asks in columns 12 or 13 of TSE’s Board Screen with a single action.

With respect to Petitioner’s second combination, Petitioner relies upon the Contract Conclusion Notices in TSE’s Notice Display Area as teaching entered order indicators. Pet. 55–57. Petitioner contends:

However, TSE does not teach displaying the Notice Display Area's entered order indicator "at a location corresponding to a particular price level along the static price axis." But locating the entered order indicator along the static price axis is a mere design choice well within the skills of a POSA. ([Ex. 1003] ¶ 121.) It would have been obvious to a POSA to display the Notice Display Area's entered order indicators "along the static price axis" (TSE's price column 11) so that the trader using the workstation could easily recognize and track his/her orders at various price levels. (*Id.*; see also *id.* at ¶ 123 (discussing other evidence demonstrating that it was known to display a trader's orders along a price axis); see also Weiss, pp. 44–46.) And, merely displaying well-known data at different locations on a graphical user interface is not enough to confer patentability. See e.g., *Cyber-Source*, 654 F.3d at 137 ("the mere manipulation or reorganization of data" is not a transformation).

Id. at 56–57.

Patent Owner disagrees.⁶ See PO Resp. 23–32. Patent Owner argues that

⁶ A Petitioner notes, we rejected similar arguments made by Patent Owner in CBM2015-00181. See Pet Reply 15 (citing Ex. 1058, 48–54). In CBM2015-00181, Petitioner proposed to modify TSE to include Belden's icons representing a trader's working orders. Here, Petitioner proposes to modify TSE's Board Screen to include the Contract Conclusion Notices in TSE's Notice Dis-

a POSA would not have been motivated to display entered order indicators along a static price axis because in certain situations the entered order indicators could actually move off the screen and thus not be viewable to the user when, for example a re-centering event causes the static price axis to shift.

PO Resp. 26 (citing Ex. 2169 ¶¶ 162, 171). Patent Owner’s declarant Mr. Thomas testifies, “for example, if a price level with an associated entered order indicator was near the bottom of the screen and a shift occurred, that price level and associated entered order would no longer be viewable on the screen, which would have been deemed a downside to traders.” Ex. 2169 ¶ 171; *see also* Ex. 2540, 83:16–84:2 (testimony of Mr. Román). Petitioner does not respond to Patent Owner’s argument in its Reply. *See* Pet. Reply 14–18.

Petitioner has the burden of proving a proposition of unpatentability by a preponderance of the evidence. 35 U.S.C. § 326(e); *see Magnum Oil Tools*, 892 F.3d at 1375. Upon review of the evidence and analysis in the Petition, we determine that Petitioner has not shown by a preponderance of the evidence that it would have been obvious to one of ordinary skill in the art to modify TSE to display the Contract Conclusion Notices in TSE’s Notice Display Area along TSE’s price column 11. Neither Petitioner nor Mr. Román, however, sufficiently address Patent Owner’s evidence to the contrary (Ex. 2169 ¶ 171). *See* Pet. Reply 14–18; Ex. 1003 ¶¶ 121–123; Ex. 2540, 83:16–84:2. Petitioner has not

play Area. Further, the record in CBM2015-00181 does not include Patent Owner’s evidence contrary to Petitioner’s proposed modification (Ex. 2169 ¶ 171; Ex. 2540, 83:16–84:2).

shown sufficiently that such a modification is “a mere design choice” or that one of ordinary skill in the art would be motivated to make the proposed modification because a “trader using the workstation could easily recognize and track his/her orders at various price levels.” *See* Pet. 57; *see also* *Magnum Oil Tools*, 892 F.3d at 1380 (“The petitioner must...articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.”).

For this reason, we determine that Petitioner has not shown by a preponderance of the evidence that it would have been obvious to one of ordinary skill in the art to modify TSE to display the Contract Conclusion Notices in TSE’s Notice Display Area along TSE’s price column 11.

Petitioner has not met its burden to show by a preponderance of the evidence that claims 1 and 17 are unpatentable under 35 U.S.C. § 103(a) over TSE and Belden.

Dependent Claims

Claims 2–16 and 18–32 depend from claim 1 and 17. For the reasons as discussed above, Petitioner has not met its burden to show by a preponderance of the evidence that claims 2–16 and 18–32 are unpatentable under 35 U.S.C. § 103(a) over TSE and Belden. *See In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) (“[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious.”).

III. MOTIONS TO EXCLUDE

Petitioner moves to exclude various ones of Patent Owner’s Exhibits. Paper 43. Patent Owner moves to exclude Petitioner’s Exhibits 1004, 1005, and 1007.

Paper 46. Because the outcome of this trial does not change based on whether or not we exclude those exhibits, we *dismiss* the Motions to Exclude as moot.

IV. CONCLUSION

For the foregoing reasons, we determine that Petitioner shows that claims 1–32 of the '382 patent are patent-ineligible under 35 U.S.C. § 101. Petitioner fails to show, by a preponderance of the evidence, that claims 1– 32 of the '382 patent are unpatentable under 35 U.S.C. § 103.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–32 of the '382 patent are unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude Evidence is *dismissed*;

FURTHER ORDERED that Petitioner's Motion to Exclude Evidence is *dismissed*; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

RELEVANT STATUTORY PROVISIONS

35 U.S.C. § 100. Definitions

...

(b) The term “process” means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.

...

35 U.S.C. § 101. Inventions patentable

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 102. Conditions for patentability; novelty

(a) Novelty; Prior Art.—A person shall be entitled to a patent unless—

(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention; or

(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

(b) Exceptions.—

(1) Disclosures made 1 year or less before the effective filing date of the claimed invention.—

A disclosure made 1 year or less before the effective filing date of a claimed invention shall not be prior art to the claimed invention under subsection (a)(1) if—

(A) the disclosure was made by the inventor or joint inventor or by another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor; or

(B) the subject matter disclosed had, before such disclosure, been publicly disclosed by the inventor or a joint inventor or another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor.

(2) Disclosures appearing in applications and patents.—A disclosure shall not be prior art to a claimed invention under subsection (a)(2) if—

(A) the subject matter disclosed was obtained directly or indirectly from the inventor or a joint inventor;

(B) the subject matter disclosed had, before such subject matter was effectively filed under subsection (a)(2), been publicly disclosed by the inventor or a joint inventor or another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor; or

(C) the subject matter disclosed and the claimed invention, not later than the effective filing date of the claimed invention, were owned by the same person or subject to an obligation of assignment to the same person.

(c) Common Ownership Under Joint Research Agreements.—Subject matter disclosed and a claimed invention shall be deemed to have been owned by the same person or subject to an obligation of assignment to the same person in applying the provisions of subsection (b)(2)(C) if—

(1) the subject matter disclosed was developed and the claimed invention was made by, or on behalf of, 1 or more parties to a joint research agreement that was in effect on or before the effective filing date of the claimed invention;

(2) the claimed invention was made as a result of activities undertaken within the scope of the joint research agreement; and

(3) the application for patent for the claimed invention discloses or is amended to disclose the names of the parties to the joint research agreement.

(d) Patents and Published Applications Effective as Prior Art.—For purposes of determining whether a patent or application for patent is prior art to a claimed invention under subsection (a)(2), such patent or application shall be considered to have been effectively filed, with respect to any subject matter described in the patent or application—

(1) if paragraph (2) does not apply, as of the actual filing date of the patent or the application for patent; or

(2) if the patent or application for patent is entitled to claim a right of priority under section 119, 365(a), 365(b), 386(a), or 386(b), or to claim the benefit of an earlier filing date under section 120, 121, 365(c), or 386(c), based upon 1 or more prior filed applications for patent, as of the filing date of the earliest such application that describes the subject matter.

35 U.S.C. § 103. Conditions for patentability; non-obvious subject matter

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

35 U.S.C. § 112. Specification

(a) In General.—

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

(b) Conclusion.—

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

(c) Form.—

A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.

(d) Reference in Dependent Forms.—

Subject to subsection (e), a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

(e) Reference in Multiple Dependent Form.—

A claim in multiple dependent form shall contain a reference, in the alternative only, to more than one claim previously set forth and then specify a further limitation of the subject matter claimed. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.

(f) Element in Claim for a Combination.—

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

- (10) **Patent No.: US 7,685,055 B2**
- (12) **United States Patent Brumfield et al.**
- (45) **Date of Patent: Mar. 23, 2010**
- (54) **SYSTEM AND METHOD FOR AUTOMATIC REPOSITIONING OF MARKET INFORMATION IN A GRAPHICAL USER INTERFACE**
- (75) **Inventors: Harris Brumfield, Chicago, IL (US); Jens-Uwe Schluetter, Evanston, IL (US)**
- (73) **Assignee: Trading Technologies International, Inc., Chicago, IL (US)**
- (*) **Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.**
- (21) **Appl. No.: 11/417,547**
- (22) **Filed: May 3, 2006**
- (65) **Prior Publication Data**
US 2006/0265305 A1 Nov. 23, 2006
- Related U.S. Application Data**
- (63) Continuation of application No. 10/403,881, filed on Mar. 31, 2003, which

is a continuation of application No. 10/125,894, filed on Apr. 19, 2002, now Pat. No. 7,389,268, which is a continuation-in-part of application No. 09/971,087, filed on Oct. 5, 2001, now Pat. No. 7,127,424, said application No. 10/125,894 is a continuation-in-part of application No. 09/590,692, filed on Jun. 9, 2000, now Pat. No. 6,772,132, and a continuation-in-part of application No. 09/589,751, filed on Jun. 9, 2000, now Pat. No. 6,938,011.

(60) Provisional application No. 60/238,001, filed on Oct. 6, 2000, provisional application No. 60/186,332, filed on Mar. 2, 2000, provisional application No. 60/325,553, filed on Oct. 1, 2001.

(51) **Int. Cl. G06Q 40/00** (2006.01)
(52) **U.S. Cl.** 705/37; 705/35
(58) **Field of Classification**
Search 705/35-45

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,674,044	A	6/1987	Kalmus
4,750,135	A	6/1988	Boilen
4,903,201	A	2/1990	Wagner
5,038,284	A	8/1991	Kramer

App. 209

(Continued)

FOREIGN PATENT DOCUMENTS

EP 1067471 A1 1/2001

(Continued)

OTHER PUBLICATIONS

Tokyo Stock Exchange ("TSE"), Publication 1, Sep. 1997.

(Continued)

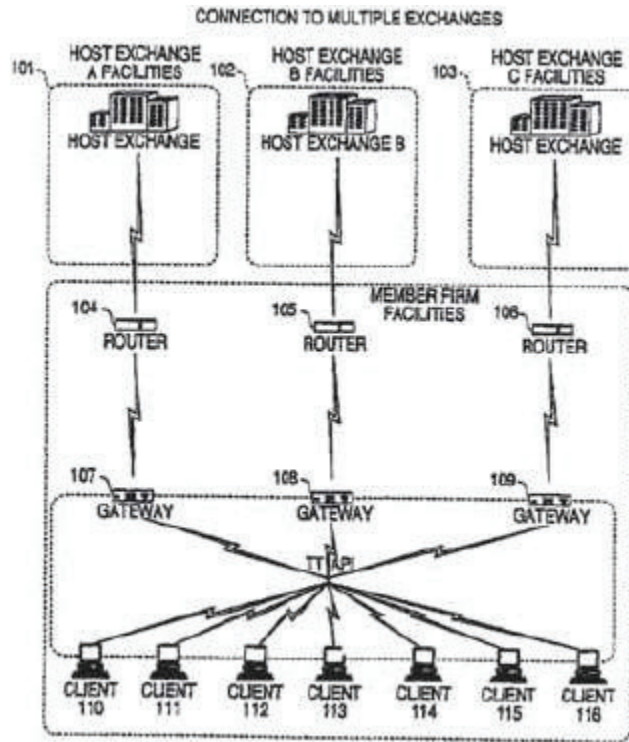
Primary Examiner—Richard C Weisberger
(74) *Attorney, Agent, or Firm*—McDonnell Boehmen Hulbert & Berghoff LLP

(57)

ABSTRACT

A method for automatically positioning information related to a commodity on a graphical user interface. Market information is displayed on the graphical user interface. The market information may be presented as a number of indicators, corresponding to particular items of interest, that are associated with a static scale. The scale may, for example, represent price. Upon detecting a predetermined condition, the location of the market information is automatically repositioned.

19 Claims, 27 Drawing Sheets



U.S. PATENT DOCUMENTS

5,077,665	A	12/1991	Silverman
5,101,353	A	3/1992	Lupien
5,136,501	A	8/1992	Silverman
5,270,922	A	12/1993	Higgins
5,297,031	A	3/1994	Gutterman
5,297,032	A	3/1994	Trojan
5,675,746	A	10/1997	Marshall
5,689,651	A	11/1997	Lozman
5,689,652	A	11/1997	Lupien et al.
5,768,158	A	6/1998	Adler
5,774,877	A	6/1998	Patterson
5,774,878	A	6/1998	Marshall

App. 211

5,793,301	A	8/1998	Patterson
5,797,002	A	8/1998	Patterson
5,845,266	A	12/1998	Lupien
5,873,071	A	2/1999	Ferstenberg
5,915,245	A	6/1999	Patterson
5,924,082	A	7/1999	Silverman
5,924,083	A	7/1999	Silverman
5,926,801	A	7/1999	Matsubara
5,946,667	A	8/1999	Tull
5,950,177	A	9/1999	Lupien et al.
5,963,923	A	10/1999	Garber
6,012,046	A	1/2000	Lupien
6,014,643	A	1/2000	Minton
6,035,287	A	3/2000	Stallaert
6,073,115	A	6/2000	Marshall
6,098,051	A	8/2000	Lupien
6,131,087	A	10/2000	Luke
6,134,535	A	10/2000	Belzberg
6,161,098	A	12/2000	Wallman
6,195,647	B1	2/2001	Martyn
6,272,474	B1	8/2001	Garcia
6,278,982	B1	8/2001	Korhammer
6,282,521	B1	8/2001	Howorka
6,408,282	B1	6/2002	Buist
6,516,303	B1	2/2003	Waltman
6,697,099	B2	2/2004	Smith
6,766,304	B2	7/2004	Kemp et al.
6,772,132	B1	8/2004	Kemp et al.
6,826,553	B1	11/2004	DaCosta et al.
6,839,686	B1	1/2005	Galant
6,876,981	B1	4/2005	Berckmans
6,938,011	B1	8/2005	Kemp et al.
6,993,504	B1	1/2006	Friesen et al.
7,127,424	B2	10/2006	Kemp, II et al.

App. 212

7,155,410	B1	12/2006	Woodmansey
7,181,424	B1	2/2007	Ketchum et al.
7,181,425	B1	2/2007	Cha
7,209,896	B1	4/2007	Serkin et al.
7,243,083	B2	7/2007	Burns et al.
2002/0023038	A1	2/2002	Fritsch
2002/0035534	A1	3/2002	Buist
2002/0046146	A1	4/2002	Otero et al.
2002/0046149	A1	4/2002	Otero et al.
2002/0046151	A1	4/2002	Otero et al.
2002/0049661	A1	4/2002	Otero et al.
2002/0055899	A1	5/2002	Williams
2002/0059129	A1	5/2002	Kemp
2002/0073017	A1	6/2002	Robertson
2002/0091611	A1	7/2002	Minton
2002/0099644	A1	7/2002	Kemp
2002/0120551	A1	8/2002	Jones
2002/0138401	A1	9/2002	Allen
2002/0178096	A1	11/2002	Marshall
2003/0004852	A1	1/2003	Burns
2003/0004853	A1	1/2003	Ram
2003/0009411	A1	1/2003	Ram
2003/0023536	A1	1/2003	Hollerman et al.
2003/0023542	A1	1/2003	Kemp et al.
2003/0065608	A1	4/2003	Cutler
2003/0069834	A1	4/2003	Cutler
2003/0097325	A1	5/2003	Friesen
2003/0126065	A1	7/2003	Eng
2003/0200167	A1	10/2003	Kemp
2003/0236737	A1	12/2003	Kemp
2004/0093300	A1	5/2004	Burns
2004/0103054	A1	5/2004	Singer
2004/0117292	A1	6/2004	Brumfield
2005/0262003	A1	11/2005	Brumfield et al.

App. 213

2006/0259382	A1	11/2006	Kemp et al.
2006/0259383	A1	11/2006	Kemp et al.
2006/0259384	A1	11/2006	Schluetter et al.
2006/0259404	A1	11/2006	Brumfield
2006/0259411	A1	11/2006	Burns
2006/0265303	A1	11/2006	Kemp et al.
2006/0265304	A1	11/2006	Brumfield et al.
2006/0271475	A1	11/2006	Brumfield et al.

FOREIGN PATENT DOCUMENTS

WO	WO9114231	A1	9/1991
WO	WO95/26005	A1	9/1995
WO	WO9849639	A1	11/1998
WO	WO9919821	A1	4/1999
WO	WO99/30259	A1	6/1999
WO	WO9953424	A1	10/1999
WO	WO00/52619	A1	9/2000
WO	WO00/62187	A2	10/2000
WO	WO00/62187	A3	10/2000
WO	WO 00/64176		10/2000
WO	WO00/65510	A1	11/2000
WO	WO01/01077		1/2001
WO	WO01/16830	A1	3/2001
WO	WO01/16852	A2	3/2001
WO	WO01/16852	C1	3/2001
WO	WO01/22315	A2	3/2001
WO	WO0122315	A3	3/2001
WO	WO 01/27843		4/2001
WO	WO 01/71557		9/2001
WO	WO0165403	A2	9/2001
WO	WO01/88808	A1	11/2001
WO	WO02/15461	A2	2/2002
WO	WO 02/33621		4/2002

App. 214

WO	WO 02/33623	4/2002
WO	WO 02/33636	4/2002
WO	WO 02/33637	4/2002
WO	WO0229686 A1	4/2002
WO	WO02/48945 A1	6/2002
WO	WO02/59815 A1	8/2002
WO	WO02/69226 A2	9/2002
WO	WO02/79940 A2	10/2002
WO	WO02/93325 A2	11/2002
WO	WO02103601 A1	12/2002
WO	WO 03/017062	2/2003
WO	WO03090032 A2	10/2003
WO	WO03090032 A3	10/2003

OTHER PUBLICATIONS

Tokyo Stock Exchange, “Publication 2”, Aug. 1998.
Tokyo Stock Exchange, Publication 3, Jul. 31, 2000.
Tokyo Stock Exchange, Document 1, Jan. 2000.
English Translation of TSE “Publication 1”.
English Translation of TSE “Publication 2”.
English Translation of TSE “Publication 3”.
English Translation of TSE Document 1.
REFCO English Translation of TSE “Publication 1”.
REFCO English Translation of TSE “Publication 2”.
REFCO English Translation of TSE “Publication 3”.
USPTO Presentation, NASDAQ, Nov. 8, 2001.
Kharouf; A Trading Room with a View, Futures. 27,
11—Nov. 1998.
www.tradingtechnologies.com/products/xtrade_full.html (viewed May 22, 2001) Jun. 9, 2000.
APT Brochure, LIFFE Exchange, circa 1990.
Trading Screen, INTEX of Bermuda, circa 1984.

Weber, Information Technology in the Major International Financial Markets, Apr. 7, 1993.
Trading Screen, TIFFE 'Exchange; circa 1989-1990.
Trading Screen, MEFF Exchange, circa 1990.
Cavaletti, Order Routing Article, Futures Magazine, Feb. 1997.
Aurora Article, CBOT, circa 1989.
One Click Trading Options, Trading Technologies, circa 1998.
Trading Screen, SWX Exchange, circa 1990.
Expanding futures and options trading around the world, around the clock, Globex, circa 1989.
Hansell, The computer that ate Chicago, Institutional Investor, Feb. 1989.
Globex Report: An update on the CME Global electronic exchange, Feb. 10, 1989.
NYMEX Access Documents, New York Mercantile Exchange, Feb. 28, 1992.
CATS Traders' Manual, Toronto Stock Exchange, Sep. 30, 1977.
Market Watch, Trading Screen, date not available.
Grimmer, Peake, Sellers, Preliminary Feasibility Study, Bermudex Ltd., Nov. 1980.
Peake, Mendellson, The ABCs of trading on a national market system, Appendix C of Preliminary Feasibility Study, Bermudex Ltd., Sep. 1997.
Peake. The last 15 meters. Appendix E of Preliminary Feasibility Study, Bermudex Ltd., Jun. 15, 1997.
Declaration of Brendan Bradley in Case No. 04 C 5312, Nov. 18, 2004.
Memorandum Opinion Published Feb. 9, 2005, of Judge James B. Moran in Case No. 04 C 5312.
Search Report issued by the Australian Patent Office for SG 200406082-8.

NASDAQ Workstation II User Guide, Guide to Enhancements for NASDAQ Workstation II Software Release (Apr. 1998) as viewed on the Internet Achieves <http://web.archive.org/web/20031208041112/nasdaqtrader.com/trader/tradingservices/productservices/userguides/nwliguide.pdf>.
International Search Report for PCT/US03/12201.
Office Action issued by the USPTO on Jun. 26, 2007 for U.S. Appl. No. 11/417,871.
Pending U.S. Appl. No. 10/403,757, filed Mar. 3, 2003.
Pending U.S. Appl. No. 10/125,894, filed Apr. 19, 2002.
Pending U.S. Appl. No. 10/403,881, filed Mar. 31, 2003.
MLT Trade Vizion, <http://www.trade-vizion.com/modules.php?name+Products>—Jul. 29, 2004.
Office Action issued by the UPSTO on Mar. 23, 2007 for U.S. Appl. No. 10/125,894.

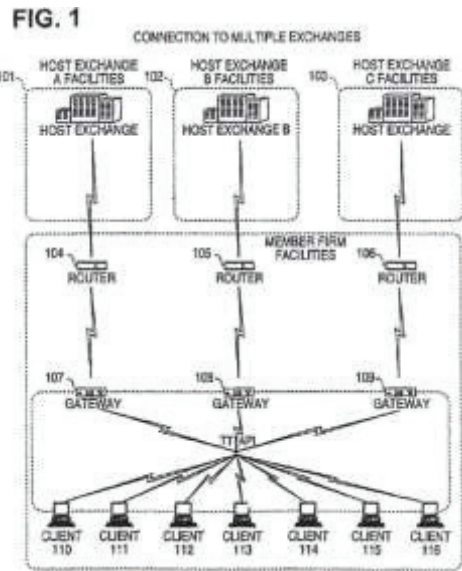


FIG. 2

	201	202	203	204	205	206	207	208	
	Contract	Depth	BidQty	BidPrc	AskPrc	AskQty	LastPrc	LastQty	Total
1	CDHO	•	785	7626	7627	21	7627	489	8230
2			626	7625	7629	815			
3			500	7624	7630	600			
4			500	7623	7631	2456			
5			200	7622	7632	800			

FIG. 3

SYCOM FGBL DEC99						-	□	×
E/W	10:48:44	BidQ	AskQ	Prc	LTQ			
318	L	3		104	99			
320	R	5		24	98			
322	720			33	97			
324	×	10		115	96			
326	0			32	95			
328	10	1H		27	94			
	50	3H		63	93			
312	S 0 W 24	1K	5H	45	92			
	S 0 W 7	CLR		28	91			
330	×	10		20	90	10		
332	17	▽		18	89			
314	B 0 W 15	CXL		97	88			
	B 0 W 13	+	-	30	87			
334	NET 0			43	86			
336	B 0 W 17	NET REAL		110	85			
338				23	84			
				31	83			
342				125	82			
				21	81			

310 316 300 302 304 308

306

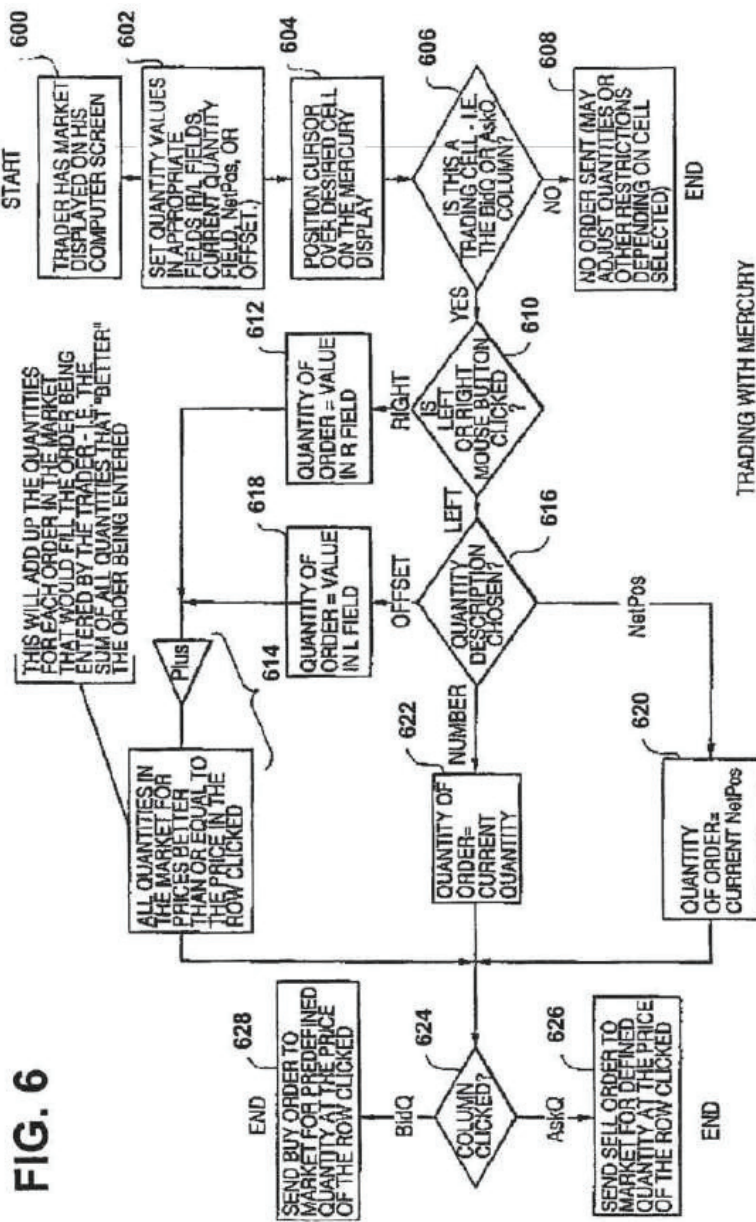
FIG. 4

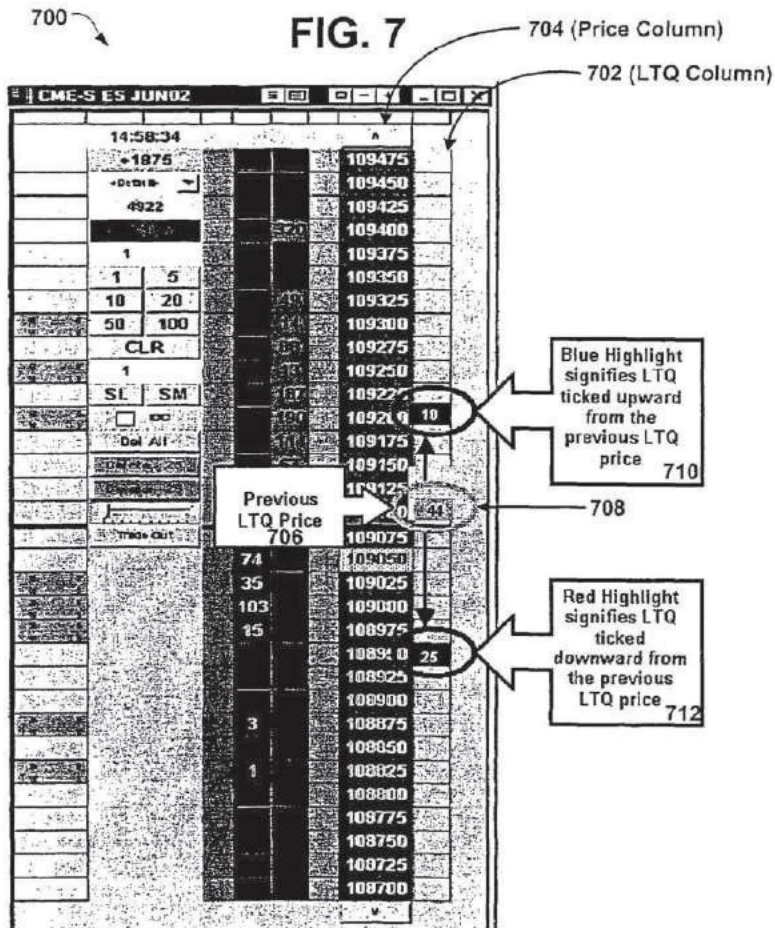
SYCOM FGBL DEC99						[-] [] [X]	
E/W	10:48:44		BidQ	AskQ	Prc	LTQ	
	L	3		104	99		
	R	5		24	98		
	720			33	97		
	X	10		115	96		
	0			32	95		
	10	1H		27	94		
	50	3H		63	93	10	} 400
S 10 W 14	1K	5H		43	92		
	CLR			125	91		
	X	10		97	90		
	17	▼		18	89		
B 0 W 15	CXL			97	88		
B 0 W 13	+	-		30	87		
	NET 0			43	86		
B 0 W 17	NET REAL			110	85		
				23	84		
				31	83		
				125	82		
				21	81		

FIG. 5

SYCOM FGBL DEC99						[-]	[+]	[X]
E/W	10:48:44		BidQ	AskQ	Prc	LTQ		
	L	3		104	99			
510	R	5		24	98			
508	720			33	97			
	X	10		115	96			
	0			32	95			
	10	1H		27	94			
	50	3H		63	93			
S 0 W 24	1K	5H		45	92			
S 0 W 7	CLR			28	91			
	X	10		20	90	10		
	17	▼		18	89			
502	BO W 17	CXL		97	88			
	B 0 W 13	[+]	[-]	30	87			
	BO W 5	NET 0		43	86			
	BO W 15	NET REAL		110	85			
				23	84			
				31	83			
				125	82			
				21	81			

514
500
506
504
512





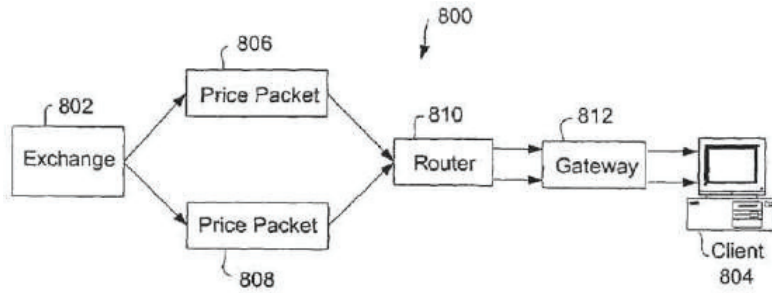


FIG. 8

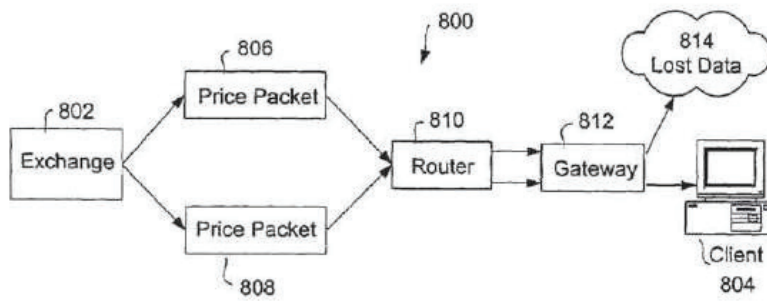


FIG. 9

FIG. 10

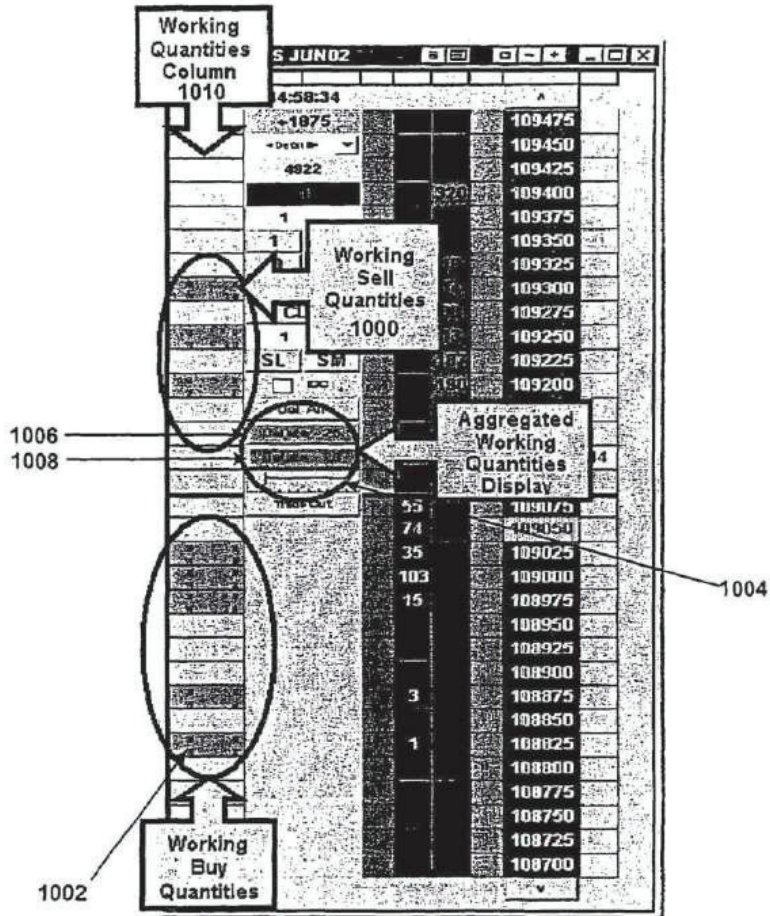
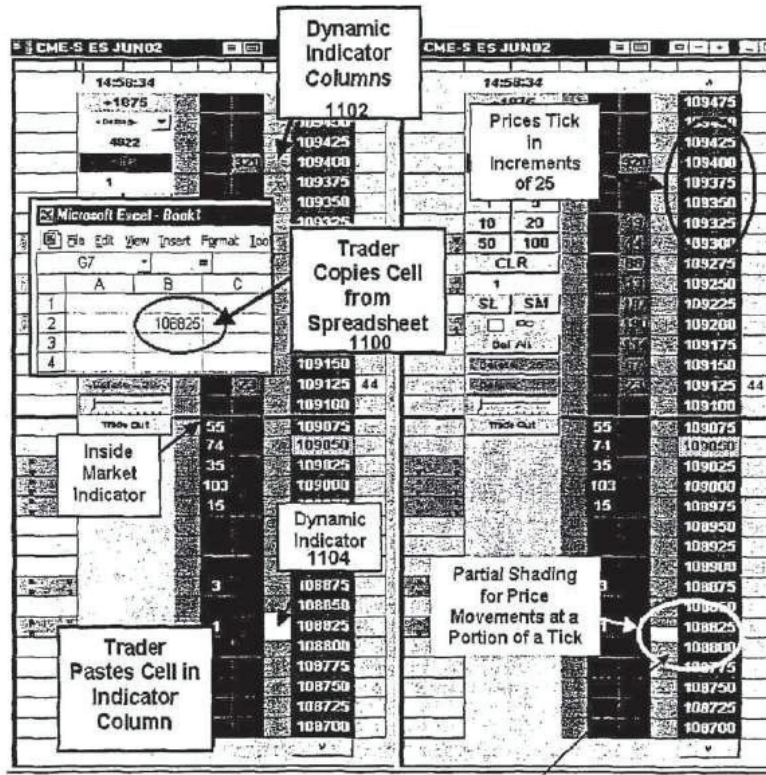


FIG. 11A

FIG. 11B



1110

FIG. 12A

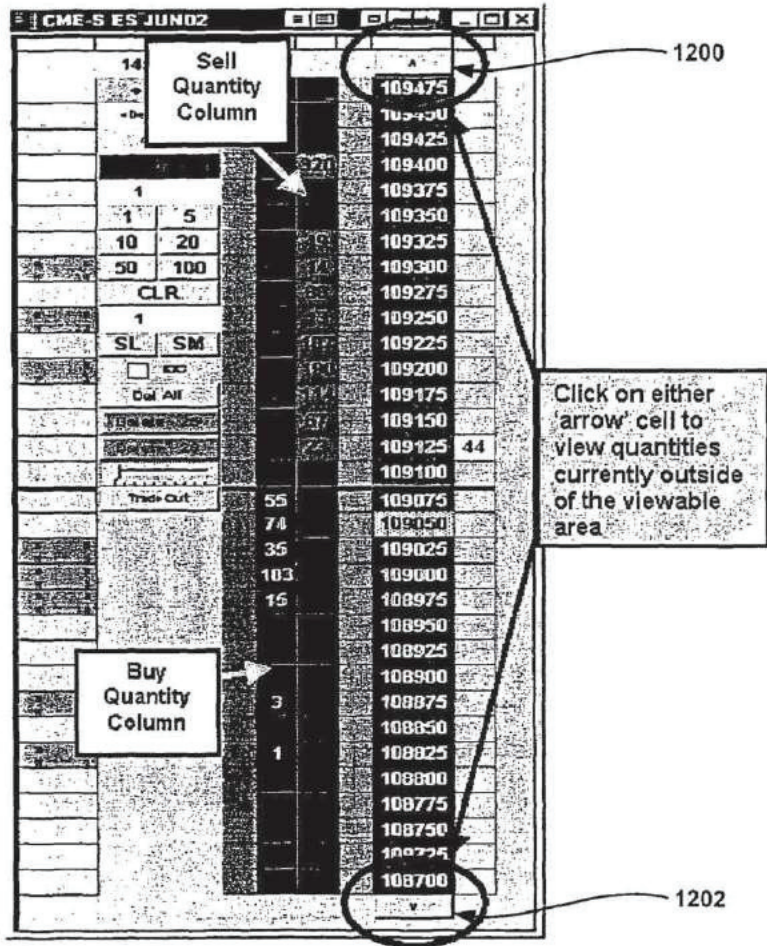


FIG. 12B

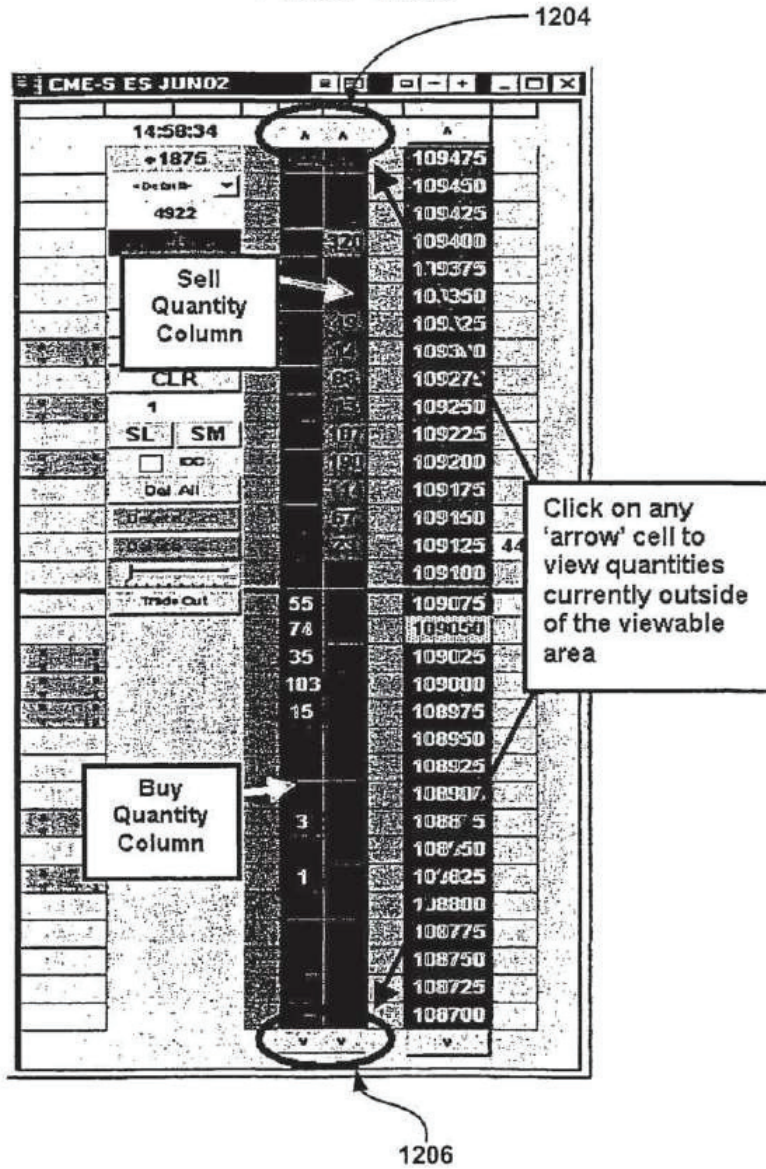


FIG. 13A

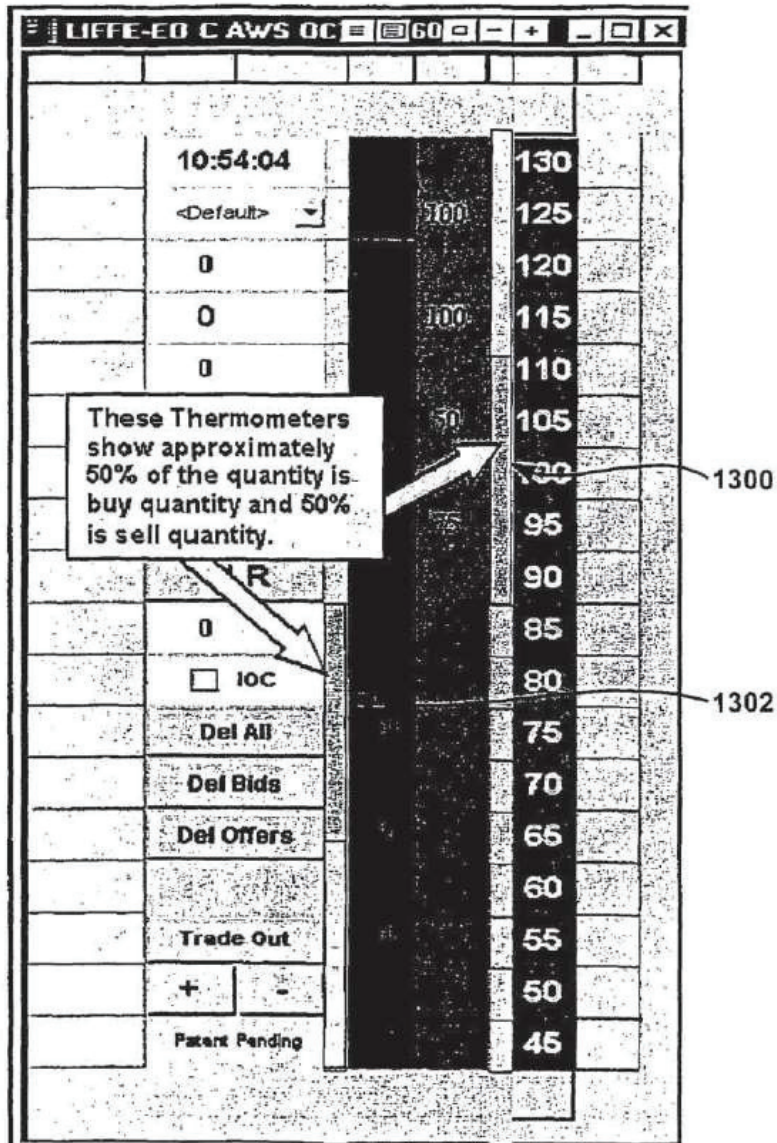


FIG. 13B

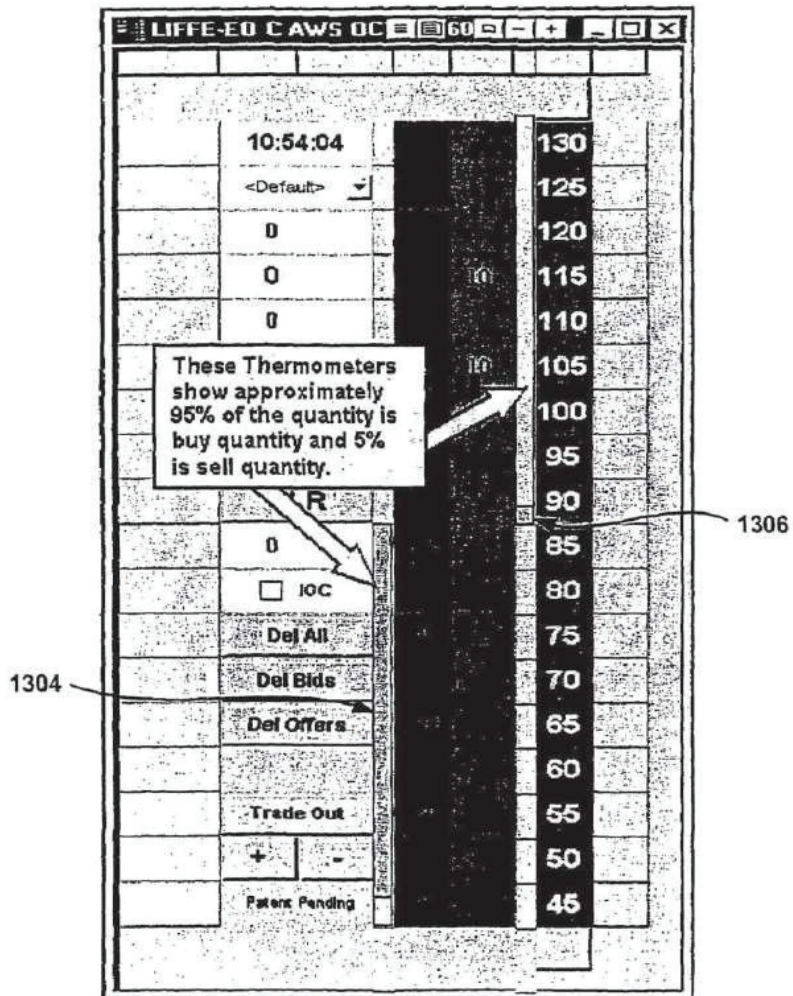


FIG. 14A

FIG. 14B

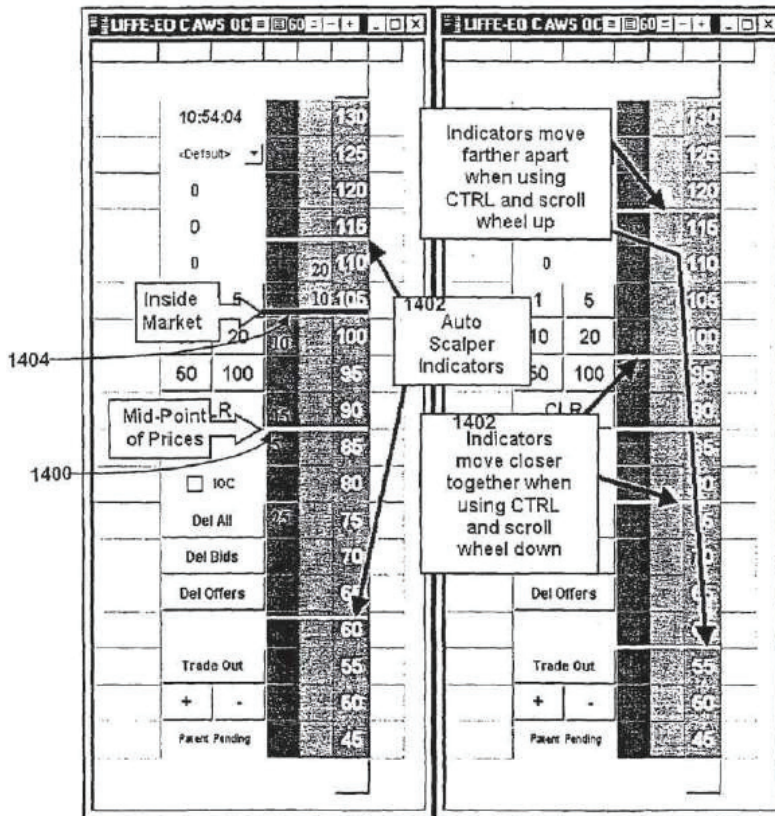


FIG. 15A

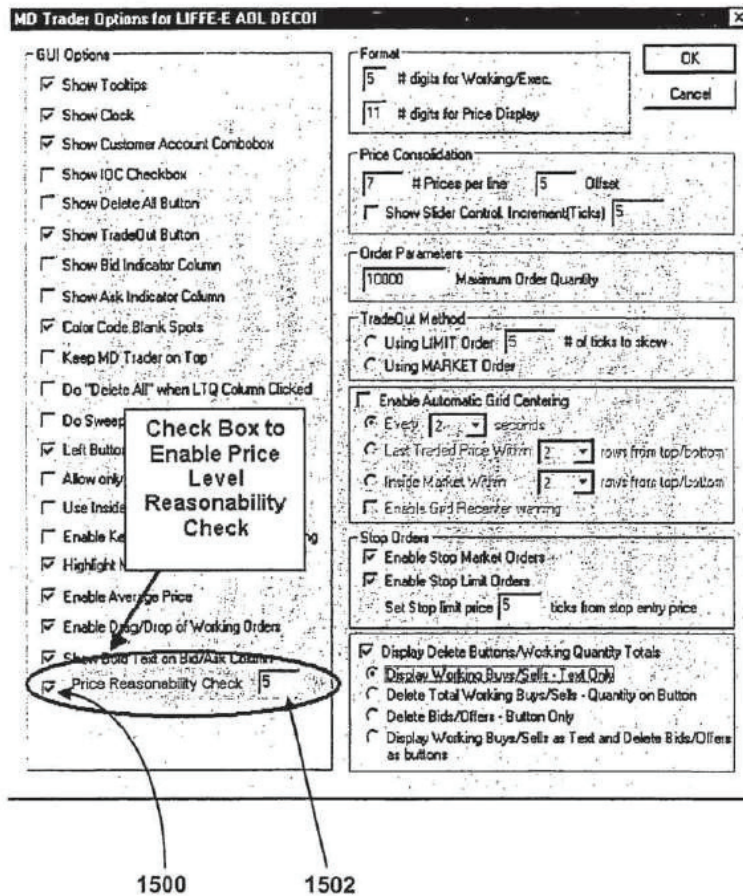


FIG. 15B

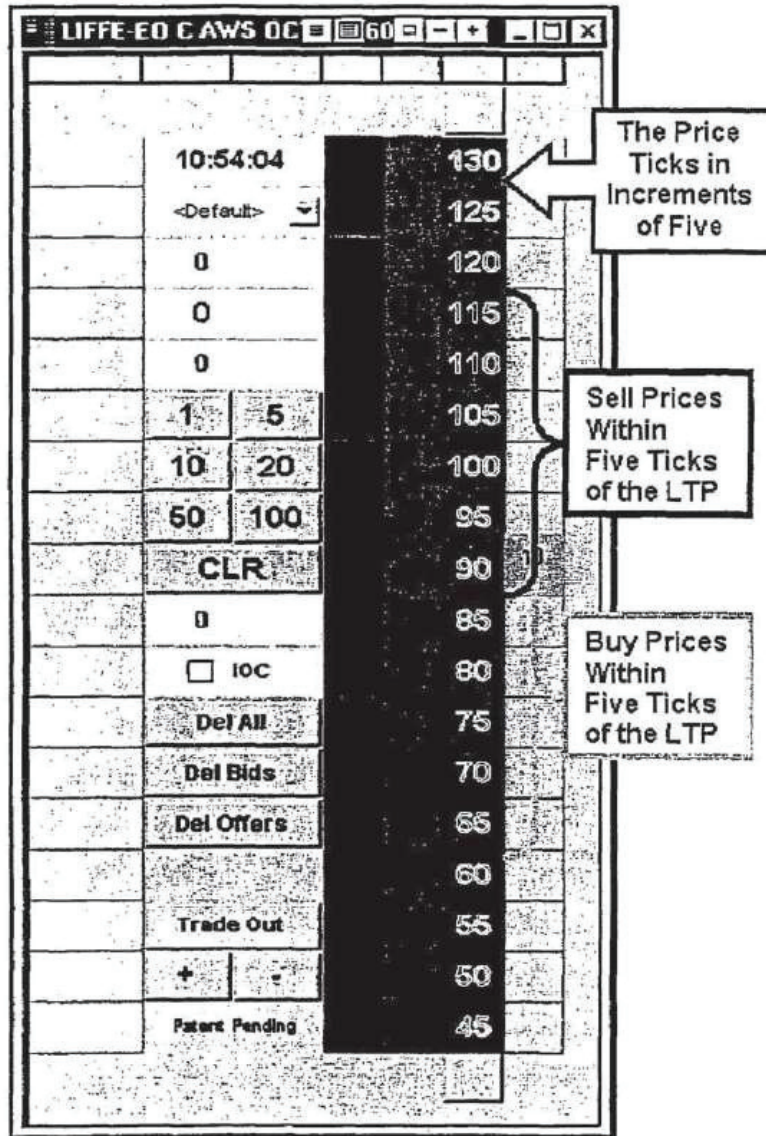


FIG. 16A

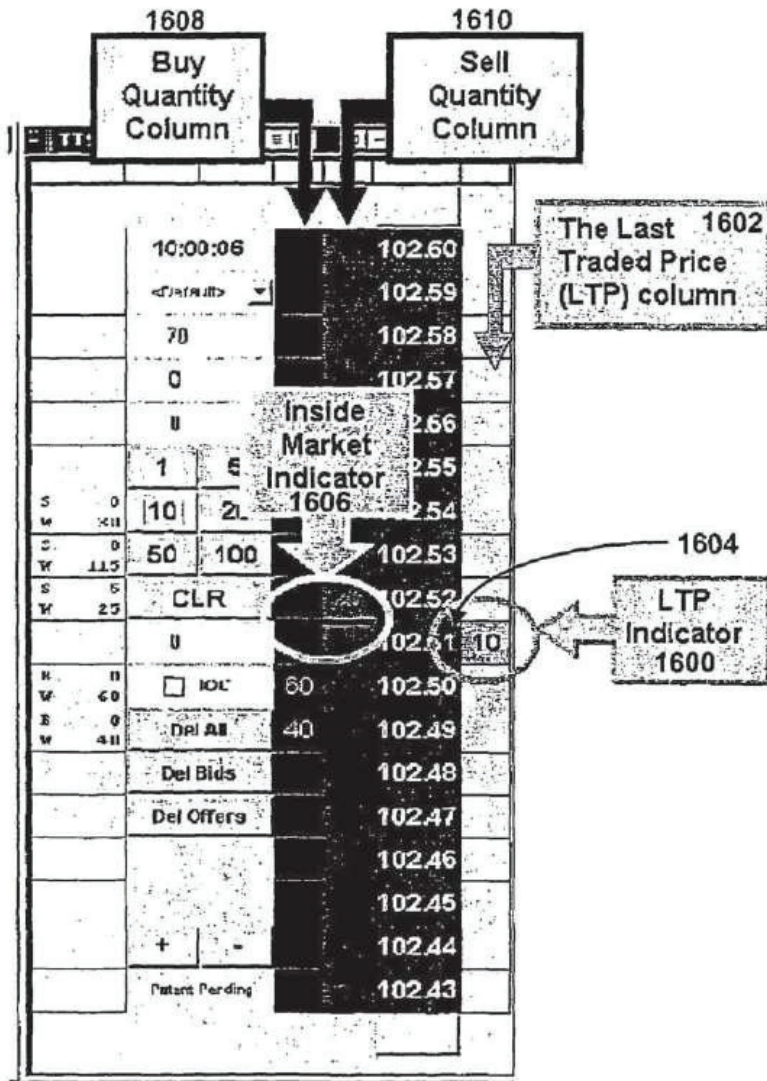


FIG. 16B

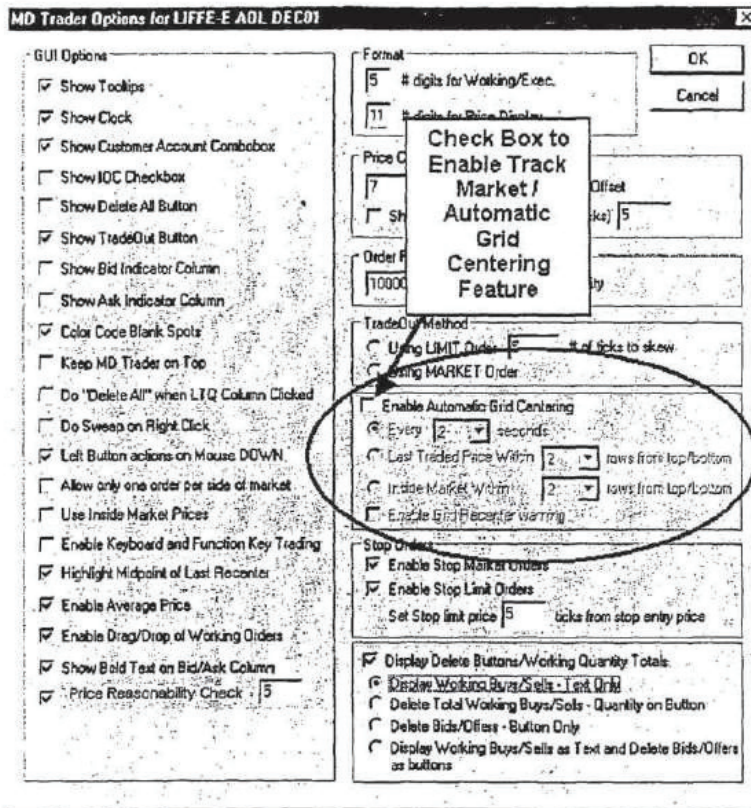


FIG. 17

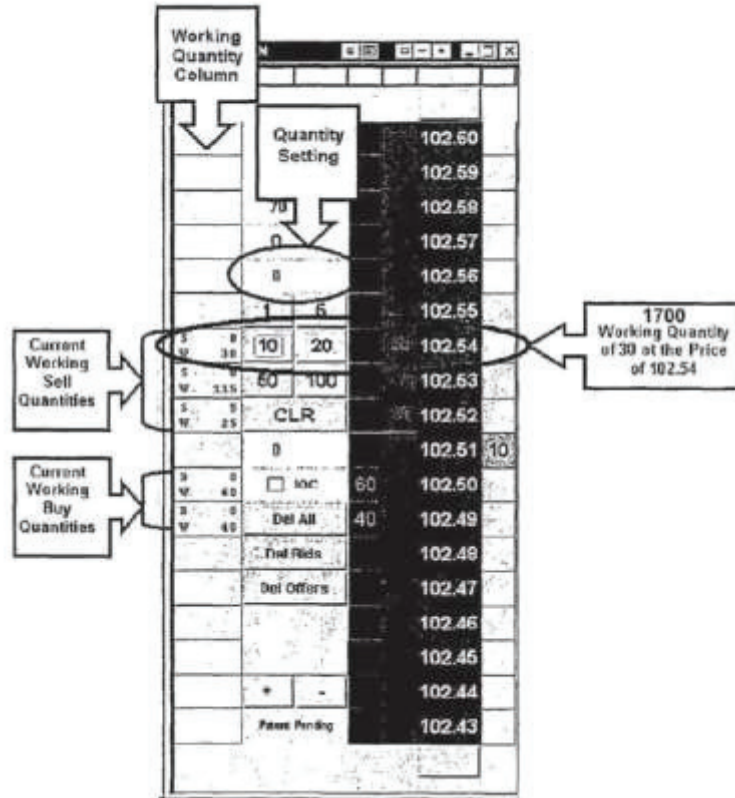


FIG. 18

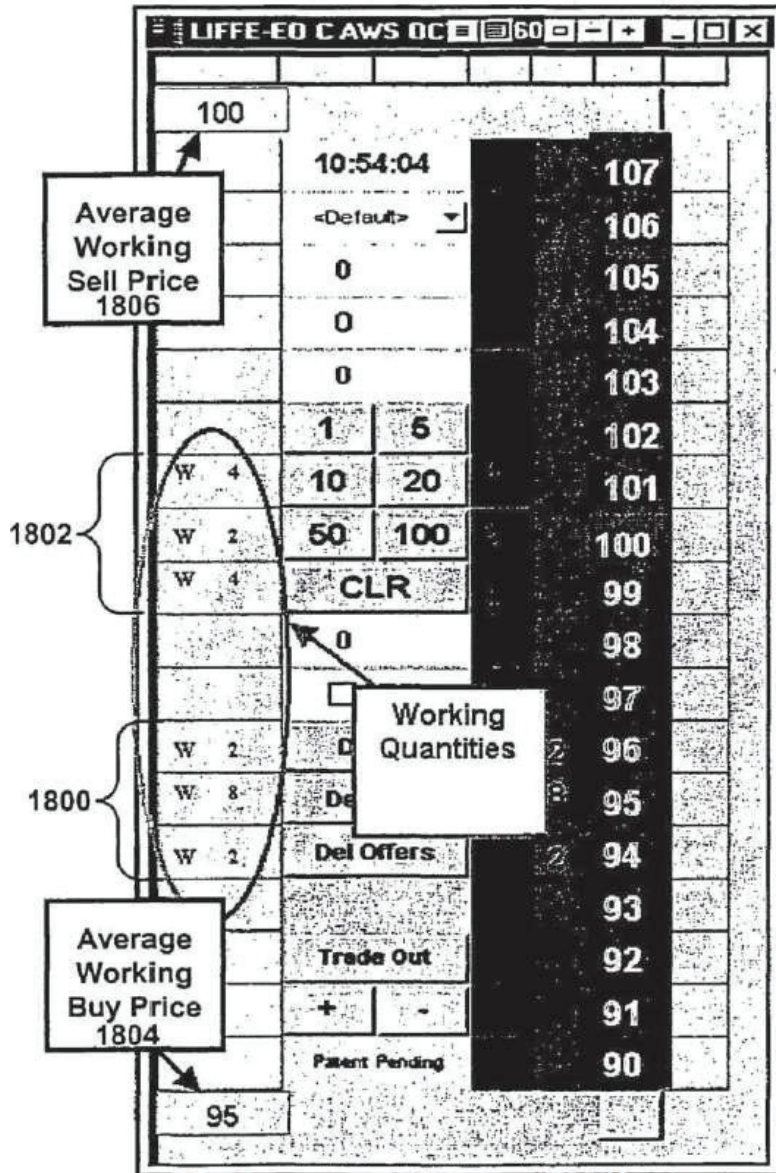


FIG. 19A

FIG. 19B

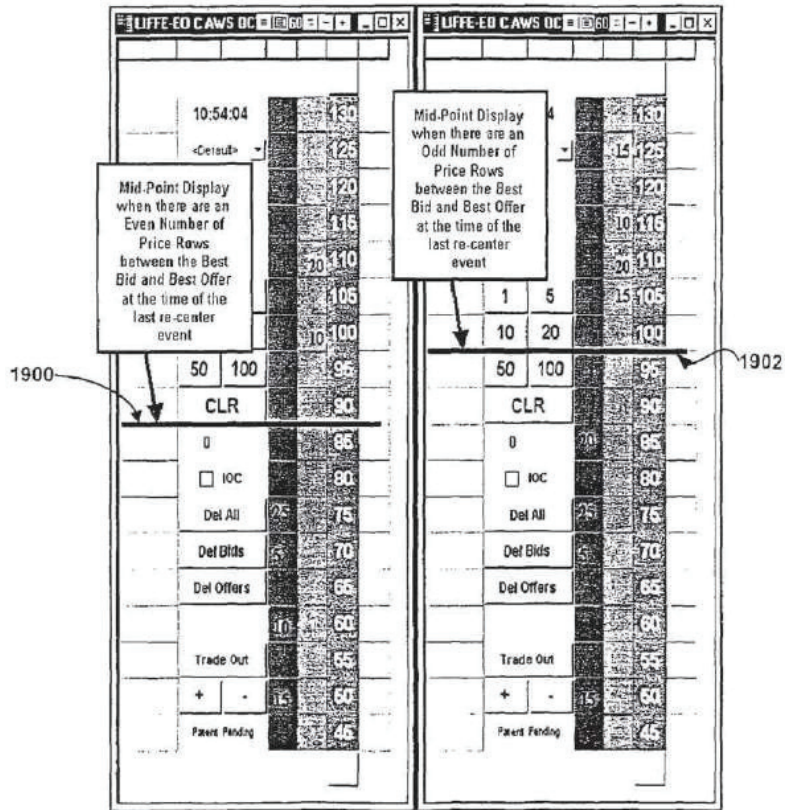


FIG. 19C

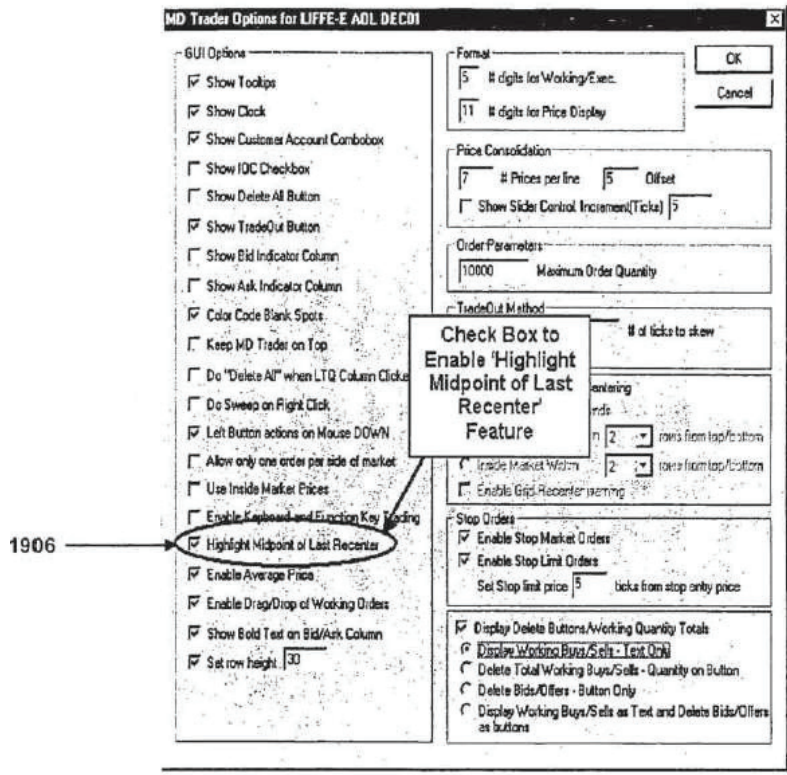


FIG. 20A

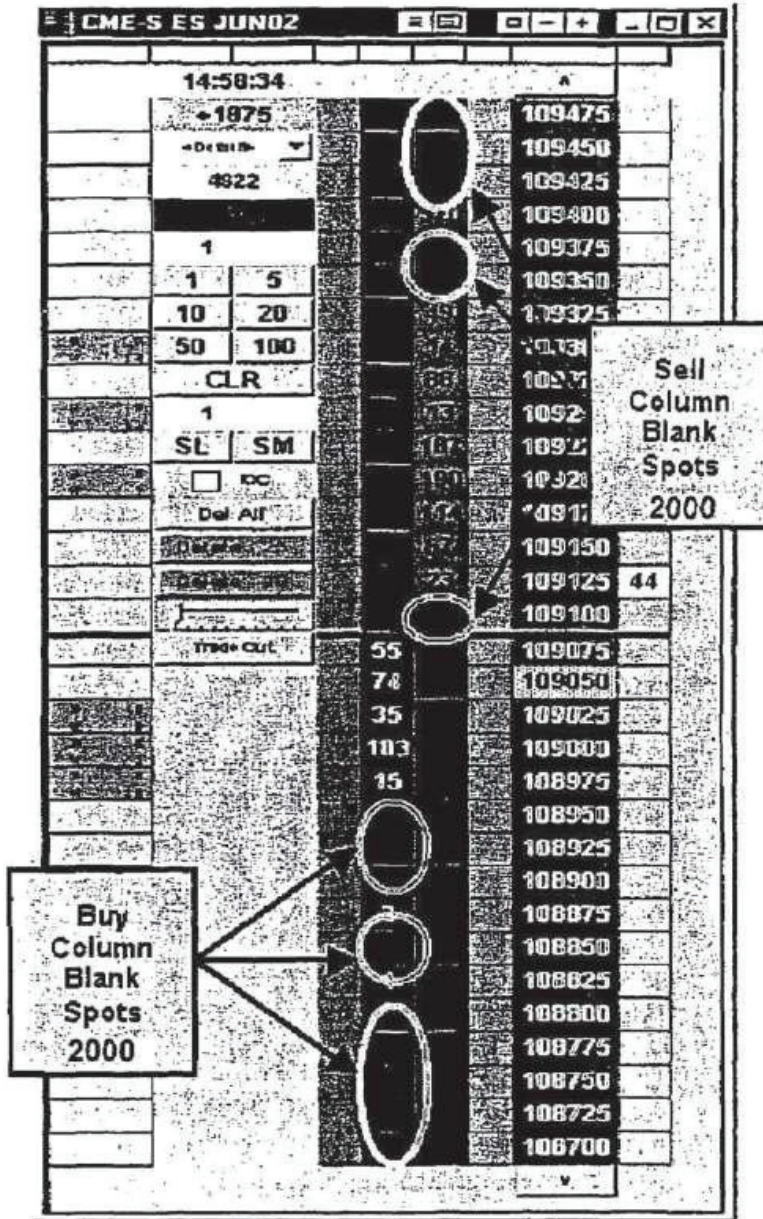


FIG. 20B

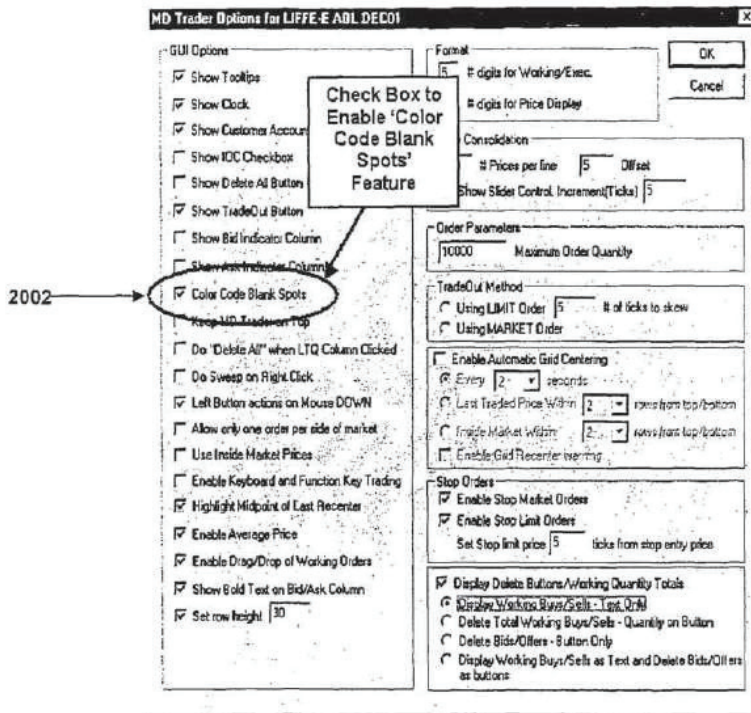


FIG. 21

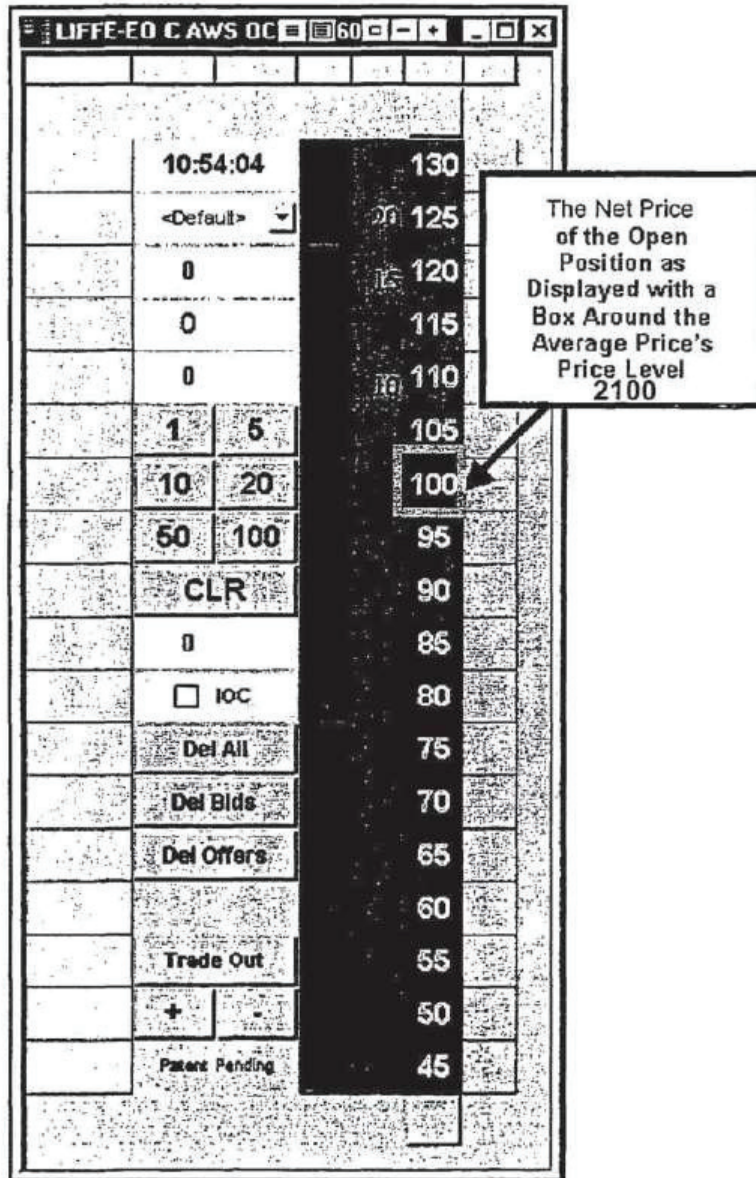
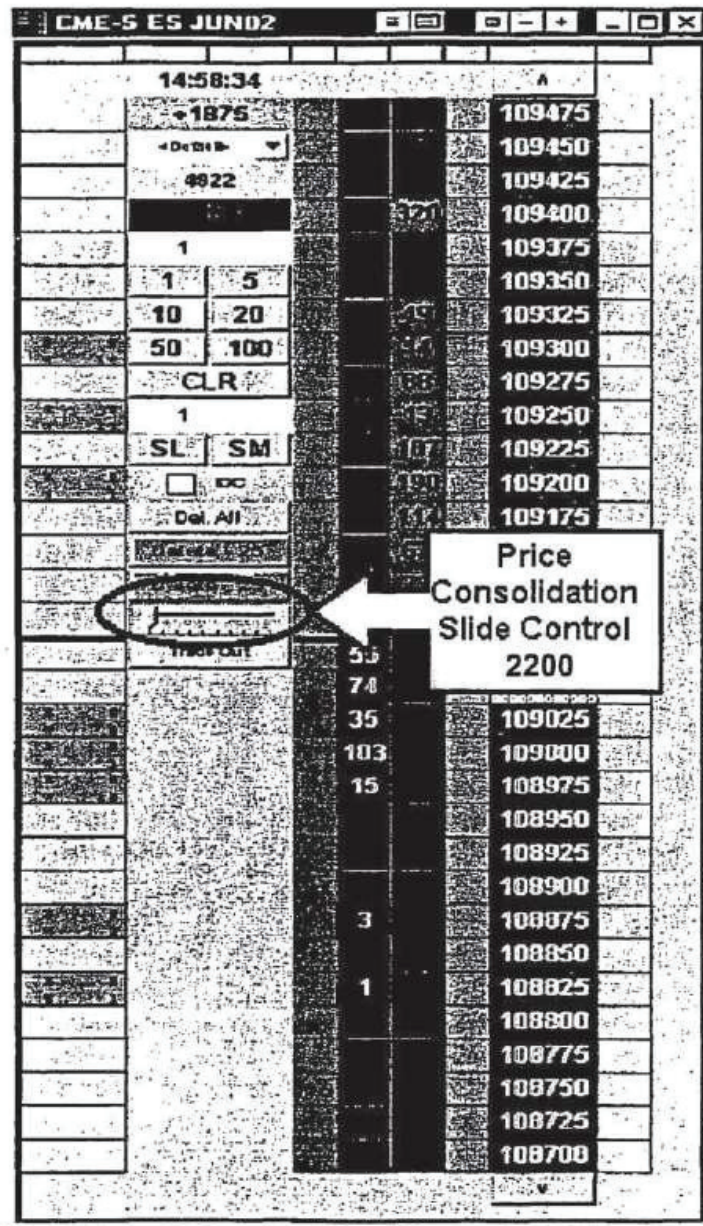


FIG. 22



**SYSTEM AND METHOD FOR AUTOMATIC
REPOSITIONING OF MARKET
INFORMATION IN A GRAPHICAL USER
INTERFACE**

This application is a continuation of U.S. patent application Ser. No. 10/403,881, filed Mar. 31, 2003, which is a continuation of U.S. patent application Ser. No. 10/125,894, "Trading Tools for Electronic Trading," filed Apr. 19, 2002 now U.S. Pat No. 7,389,268, which is a continuation-in-part of U.S. patent application No. Ser. 09/971,087, filed Oct. 5, 2001 now U.S. Pat No. 7,127,424, which claims the benefit of U.S. Provisional Application No. 60/238,001, filed Oct. 6, 2000. U.S. patent application Ser. No. 10/125,894 is also a continuation-in-part of U.S. patent application Ser. No. 09/590,692, filed Jun. 9, 2000 now U.S. Pat No. 6,772,132 and U.S. patent application Ser. No. 09/589,751, filed Jun. 9, 2000 now U.S. Pat No. 6,938,011, both of which claim the benefit of U.S. Provisional Application No. 60/186,322, filed Mar. 2, 2000. U.S. patent application Ser. No. 10/125,894 also claims the benefit of U.S. patent application Ser. No. 60/325,553, filed Oct. 1, 2001. The entire content of each of the above-referenced applications is incorporated herein by reference.

FIELD OF INVENTION

The present invention is directed to electronic trading. Specifically, the present invention is directed to tools for trading products that can be traded with quantities and/or prices.

BACKGROUND

Many exchanges throughout the world utilize electronic trading in varying degrees to trade stocks, bonds, futures, options and other products. These electronic exchange are based on three components: mainframe computers (host), communications servers, and the exchange participants' computers (client). The host forms the electronic heart of the fully computerized electronic trading system. The system's operations cover order-matching, maintaining order books and positions, price information, and managing and updating the database for the online trading day as well as nightly batch runs. The host is also equipped with external interfaces that maintain uninterrupted online contact to quote vendors and other price information systems.

Traders can link to the host through at least three types of structures: high speed data lines, high speed communications servers or the Internet. High speed data lines establish direct connections between the client and the host. Another connection can be established by configuring high speed networks or communications servers at strategic access points worldwide in locations where traders physically are located. Data is transmitted in both directions between traders and exchanges via dedicated high speed communication lines. Most exchange participants install two lines between the exchange and the client site or between the communication server and the client site as a safety measure against potential failures. An exchange's internal computer system is also often installed with backups as a redundant measure to secure system availability. The third connection utilizes

the Internet. Here, the exchange and the traders communicate back and forth through high speed data lines, which are connected to the Internet. This allows traders to be located anywhere they can establish a connection to the Internet.

Irrespective of the way in which a connection is established, the exchange participants' computers allow traders to participate in the market. They use software that creates specialized interactive trading screens on the traders' desktops. The trading screens enable traders to enter and execute orders, obtain market quotes, and monitor positions. The range and quality of features available to traders on their screens varies according to the specific software application being run. The installation of open interfaces in the development of an exchange's electronic strategy means users can choose, depending on their trading style and internal requirements, the means by which they will access the exchange.

The world's stock, bond, futures, options and other exchanges have volatile products with prices that move rapidly. To profit in these markets, traders must be able to react quickly. A skilled trader with the quickest software, the fastest communications, and the most sophisticated analysis can significantly improve the trader's own or the trader's firm's bottom line. The slightest speed advantage can generate significant returns in a fast moving market. In today's securities markets, a trader lacking a technologically advanced interface is at a severe competitive disadvantage.

Irrespective of what interface a trader uses to enter orders in the market, each market supplies to and

requires from every trader the same information. The bids and asks in the market make up the market data and everyone logged on to trade can receive this information if the exchange provides it. Similarly, every exchange requires that certain information be included in each order. For example, traders must supply information like the name of the commodity, quantity, restrictions, price and multiple other variables. Without all of the order information, the market will not accept the order.

In existing systems, multiple elements of an order must be entered prior to an order being sent to market, which is time consuming for the trader. Such elements include the commodity symbol, the desired price, the quantity and whether a buy or a sell order is desired. The more time a trader takes entering an order, the more likely the price on which the trader wanted to bid or offer will change or not be available in the market. The market is fluid as many traders are sending orders to the market simultaneously. In fact, successful markets strive to have such a high volume of trading that any trader who wishes to enter an order will find a match and have the order filled quickly, if not immediately. In such liquid markets, the prices of the commodities fluctuate rapidly. On a trading screen, this results in rapid changes in the price and quantity fields within the market grid. If a trader intends to enter an order at a particular price, but misses the price because the market prices moved before the trader could enter the order, the trader may lose hundreds, thousands, even millions of dollars. The faster a trader can trade, the less likely it will be that the trader will miss the trader's price and the more likely the trader will make money.

With the advent of electronic trading, it has become easier for a larger number of people to have access to participate in the market at any given time. Such an increase in the number of potential traders has led to other changes, including a more competitive market, greater liquidity, rapidly changing prices, and other changes. Due to the complexities that these changes bring, it is increasingly important to have a system of making the most accurate and calculated trades possible in the most efficient manner. It is therefore desirable for electronic trading systems to offer tools that can assist a trader in adapting to an electronic marketplace, and help the trader to make trades at desirable prices.

SUMMARY

The preferred embodiments relate to a system and method for automatic repositioning of market information in a graphical user interface.

In accordance with a first aspect, a method for automatically positioning information related to a commodity on a graphical user interface is provided. The method includes receiving market information relating to the commodity from an electronic exchange. The market information may include a number of items of interest that are associated with a price. The method displays an information display region, which has a number of locations arranged such that each location corresponds to a price level along at least a portion of a static price axis. The method also displays a number of indicators, at a first time. Each indicator is associated with an item of interest and each indicator is displayed in one of the locations in the information

display region. The method further includes automatically repositioning the static price axis upon detecting a predetermined condition so that the number of locations of the information display region corresponds to a different portion of the static price axis at a second time. In this manner, the indicators are moved to a new location in the information display region that corresponds to the price level on the static price axis that is associated with that indicator.

In accordance with a second aspect, a method for automatically re-positioning market information relating to a commodity on a graphical user interface is provided, where the method includes displaying a plurality of items of interest comprising market information in relation to a static scale in a trading interface. At least one item of interest from the plurality of items of interest is identified as a basis for automatically positioning the plurality of items of interest. The display on the trading interface is updated as the market information changes, causing one or more of the plurality of items of interest to move in relation to the static scale. The method then automatically re-positions the plurality of items of interest in response to the identified item of interest.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates the network connections between multiple exchanges and client sites;

FIG. 2 illustrates screen display showing the inside market and the market depth of a given commodity being traded;

FIG. 3 illustrates an alternative display, having bid and ask quantities displayed in association with a

static price scale, that may be used in accordance with preferred embodiments;

FIG. 4 illustrates the display at a later time showing the movement of values when compared to FIG. 3;

FIG. 5 illustrates a display with parameters set in order to exemplify the trading method;

FIG. 6 is a flowchart illustrating one process for display and trading using the displays of FIGS. 3 through 5;

FIG. 7 illustrates a Last Traded Quantity marker in accordance with a preferred embodiment, and further illustrates color coding of the Last Traded Quantity;

FIG. 8 is a diagram showing the transfer of multiple data fees between an exchange and a client;

FIG. 9 is a diagram showing a disruption in one of the data feeds shown in FIG. 8;

FIG. 10 illustrates a display showing the aggregated working quantities in a market for a user's buy and sell orders;

FIGS. 11A and 11B are displays showing a dynamic indicator;

FIGS. 12A and 12B are displays showing "arrow" cells that may be used to view items of interest outside the current display;

FIGS. 13A and 13B are displays showing examples of thermometer indicators to illustrate the quantity of buy and sell interest in a market;

FIGS. 14A and 14B are displays illustrating auto scalper indicators;

FIGS. 15A and 15B are a display showing an embodiment to in which a user may select the price level reasonability check feature through a dialog box, and a display showing a measure of reasonability in relation to the Last Traded Price, respectively;

FIG. 16A is a display showing the display of the last traded price and inside market for use with the automatic grid centering feature of a preferred embodiment; and FIG. 16B is a display showing how a user may select and manipulate the automatic grid positioning feature;

FIG. 17 is a display showing a user's current working sell quantities and working buy quantities and additional criteria used for implementing the "drag and drop" feature of a preferred embodiment;

FIG. 18 is a display showing the working quantities of a user in addition to the user's average working buy price and average working sell price;

FIGS. 19A and 19B are displays showing the function of the highlight midpoint re-centering feature of a preferred embodiment; FIG. 19C is a sample GUI options dialog box in which the highlight midpoint re-centering feature can be activated according to one embodiment of the present invention;

FIG. 20A is a display showing how blank spots are color-coded according to one embodiment; FIG. 20B is a display of a sample GUI options dialog box in which a user can activate the color coding feature of FIG. 20A;

FIG. 21 is a display showing how the average price of a trader's open position is indicated according to one embodiment of the invention; and

FIG. 22 is a display showing one embodiment of a consolidation control icon in accordance with a preferred embodiment

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As described with reference to the accompanying figures, trading tools in accordance with various preferred embodiments are provided to, among other things, facilitate fast and accurate order entry. Certain of the trading tools work particularly well with a trading display that shows working orders and/or bid and ask quantities, or other market information, displayed in association with a static price scale or axis. An example of such a trading display is illustrated in FIGS. 3 through 5. It is to be understood that, in this context, static does not mean immovable, but rather means fixed in relation. For example, with a static price scale, the scale itself may be movable, but the prices represented remain fixed in relation to each other, subject to consolidation or expansion as described below. Trading applications that generate different trading displays may alternatively be used.

In a preferred embodiment, one or more of the trading tools described herein is implemented on a computer or electronic terminal. The computer is able to communicate either directly or indirectly (using intermediate devices) with one or more exchanges to receive and transmit market, commodity, and trading order information. The computer or terminal is able to interact with the trader and to generate contents and characteristics of a trade order to be sent to the exchange. A trading application allows for a trader to view market data, enter and cancel trade orders

and/or view orders. The scope of the present invention is not limited by the type of terminal or device used, and is not limited to any particular type of trading application. Rather, the trading tools may be implemented on any existing or future terminal or device with the processing capability to perform the functions described herein.

As used herein, the word “commodity” refers simply to a thing that is an object of trade. It includes anything that can be traded with a quantity and/or price. Examples of such objects include, but are not limited to, all types of traded financial products, such as, for example, stocks, options, bonds, futures, currency, and warrants, as well as funds, derivatives and collections or combinations of the foregoing. The commodity may be “real,” such as objects that are listed by an exchange for trading, or “synthetic,” such as a combination of real commodities that is created by the user.

Further, the specification may refer to a single click of a mouse as an example of a single action of the user for input and interaction with the terminal display. In order to allow actions to be taken in the shortest amount of time, a preferred embodiment of the trading application responds upon depressing the mouse button, rather than waiting for the up click. While this may describe a preferred mode of interaction, the scope of the present invention is not limited to the use of a mouse as the input device, such as a keyboard, joystick or touch screen, may be considered the single action of the user.

An electronic trading system may be configured to allow for trading in a single or in multiple exchanges

simultaneously. Connections for an example of such a system are illustrated in FIG. 1. This illustration shows multiple host exchanges **101-103** connected through routers **104-106** to gateways **107-109**. Multiple client terminals **110-116** for use as trading stations can then trade in the multiple exchanges through their connection to the gateways **107-109**. It should be noted that the trading tools of the preferred embodiment are not limited to any particular network architecture, but rather may be applied with utility on workstations or other client devices in any network that can be used for electronic trading.

When an electronic trading system is configured to receive data from multiple exchanges, it is preferable to translate the data from each exchange into a format that may be displayed in FIG. 1, an application program interface (“TT API” as depicted in the FIG. 1) translates the incoming data formats from the different exchanges to a common data format. This translation function of a preferred embodiment may be disposed anywhere in the network, for example, at the gateway server, at the individual workstations or at both. In addition, storage elements at the gateway servers, the client workstations, and/or other external storage may cache, buffer, or store historical data, such as order books that list the user’s active orders in the market; that is, those orders that have neither been filled nor cancelled. Information from different exchanges can be displayed in one or in multiple windows at the client workstation. Accordingly, while reference is made through the remainder of the specification to a single exchange to which a trading terminal is connected, the scope of the invention includes the ability to trade, in accordance with the trading

methods described herein, in multiple exchanges using a single trading terminal.

A commercially available trading application that allows a user to trade in a system like that shown in FIG. 1 is X_TRADER® from Trading Technologies International, Inc. of Chicago, Ill. X_TRADER® also provides an electronic trading interface, referred to as MD_TRADER™, in which working orders and/or bid and ask quantities are displayed in association with a static price scale. The preferred embodiments, however, are not limited to any particular product that performs the translation, storage and/or display functions.

Several preferred embodiments include the display of “market depth” and/or allow a user to view the market depth of a commodity and to enter orders with a single input, such as the click of a computer mouse button. As used herein, market depth is represented by the available order book, including the current bid and ask quantities and their associated prices. In other words, subject to the limits noted below, market depth is each available pending bid and ask quantity, entered at a particular price, in addition to the “inside market.” For a commodity being traded, the inside market is the highest bid price and the lowest ask price. For embodiments relating to a display that includes market depth, interfaces as shown in FIGS. 2 and 3 are exemplary. Other trading applications that are capable of displaying market depth are suitable alternatives, unless otherwise noted. Furthermore, the preferred embodiments are not limited to an electronic trading application that displays market depth,

but can be utilized with any electronic trading application.

Generally, the exchanges send price, order and fill information to the gateways **107-109**. The trading application, for example X_TRADER®, processes this information and maps it to positions in a theoretical grid program or any other comparable mapping technique for mapping data to a screen. The physical mapping of such information to a screen grid, or display on a client device like the client devices **110-116**, may be done by any technique known to those skilled in the art. The present invention is not limited by the method used to map the data to the screen display.

The system's ability to fully display the market depth typically depends on how much of the market depth the exchange provides. Some exchanges, for example, supply an infinite market depth, while others provide no market depth or only a few orders away from the inside market. The user can preferably also choose how far into the market depth to display on the trader's screen. For example, the user may only want to have displayed the market depth within a predetermined number of ticks away from the inside market.

FIG. 2 illustrates an electronic trading interface described in a co-pending U.S. patent application Ser. No. 09/589,751, incorporated above. This display and system is just one example of a type of trading system that may incorporate one or more aspects of the present invention. The display shows the inside market and the market depth of a given commodity being traded. Row 1 represents the "inside market" for the commodity being traded which is the best (highest)

bid price and quantity and the best (lowest) ask price and quantity. Rows **2-5** represent the “market depth” for the commodity being traded. In one-preferred embodiment, the display of market depth (rows **2-5**) lists the available next-best bids, in column **203**, and asks, in column **204**. The working bid and ask quantity for each price level is also displayed in columns **202** and **205** respectively (inside market—row **1**). Prices and quantities for the inside market and market depth update dynamically on a real time basis as such information is relayed from the market.

In the screen display shown in FIG. 2, the commodity (contract) being traded is represented in row **1** by the character string “CDH0”. The Depth column **201** will inform the trader of a status by displaying different colors. Yellow indicates that the program application is waiting for data. Red indicates that the Market Depth has failed to receive the data from the server and has “timed out.” Green indicates that the data has just been updated. The other column headings in this and all of the other figures, are defined as follows. BidQty (Bid Quantity) at column **202**: the quantity for each working bid; BidPrc (Bid Price) at column **203**: the price for each working bid; AskPrc (Ask Price) at column **204**: the price for each working ask; AskQty (Ask Quantity) at column **205**: the quantity for each working ask; LastPrc (Last Price) at column **206**: the price for the last bid and ask that were matched in the market; and LastQty (Last Quantity) at column **207**: the quantity traded at the last price. Total at column **208** represents the total quantity traded of the given commodity.

The configuration of the screen display itself informs the user in a more convenient and efficient manner than many existing systems. Traders gain an advantage by seeing the market depth because they can see trends in the orders in the market. The market depth display shows the trader the interest the market has in a given commodity at different price levels.

Another type of display system and related trading method which may be used in conjunction with the preferred embodiments is described in detail in U.S. application Ser. No. 09/590,692, filed on Jun. 9, 2000. This method ensures fast and accurate execution of trades by displaying information, such as market depth or working orders, in association with an axis or scale of static prices. One embodiment using this type of display system displays the market depth on a vertical plane, which fluctuates logically up or down the plane as the market prices fluctuates. The invention is not limited to any particular display—the information could be displayed on a horizontal plane, n-dimensionally or in any other fashion. This allows the trader to trade quickly and efficiently. An example of such a display is illustrated in the screen display of FIG. 3.

In a fast moving market, where varying price levels are trading (i.e. bids and offers entering the market are being matched at different prices), it is beneficial that the trader be able to quickly enter orders and quickly see and analyze market information. Displays of the type illustrated in FIG. 3 allow the trader to quickly enter orders at specific price levels by clicking next to a static price level, displayed as a static

column in a preferred embodiment and to quickly and easily see information such as working orders. The static prices can be displayed in any matter, including in a row, on any angle, or n-dimensionally, without departing from the invention. It also is possible for the static price values to not be displayed, instead displaying just the market depth levels, working orders, or other information relative to one another along a scale or axis representing particular prices using particular colors or using other methods.

The display shown in FIG. 3 provides an order entry system, market grid, fill window and summary of market orders in one simple window. Such a condensed display simplifies the trading system by entering and tracking trades in an efficient manner. This system displays market depth in a logical, vertical fashion or horizontally or at some other convenient angle or configuration. A vertical field is shown in the figures and described for convenience, but the field could be horizontal or at an angle or n-dimensionally. The system further increases the speed of trading and the likelihood of entering orders at desired prices with desired quantities. In the preferred embodiment of the invention, the display is a static vertical column of prices with the bid and ask quantities displayed in vertical columns to the side of the price column and aligned with the corresponding bid and ask prices.

Bid quantities are in column **300** labeled BidQ and ask quantities are in column **302** labeled AskQ. The representative prices for the given commodity are shown in column **304**, where the prices are static and increment in "ticks," where a tick is the minimum change in a price value that is set by the exchange for

each commodity. The prices can be displayed as ticks, as multiples of ticks or in any other fashion. In the embodiment shown in FIG. 3, the column does not list the whole prices (e.g. **95.89**), but rather, just the last two digits (e.g. **89**). Other price display conventions may alternatively be used, as long as the requisite price information is conveyed to the user. In the example shown, the inside market, cells **306**, is **18** (best bid quantity) at **89** (best price) and **20** (best ask quantity) at **90** (best ask price). In the preferred embodiment of the invention, these three columns **300**, **302**, and **304** are shown in different colors so that the trader can quickly distinguish among them.

The values in the price column are static; that is, they do not normally change positions unless a re-centering command is received (discussed in detail later). The values in the Bid and Ask columns **300** and **302**, however, are dynamic; that is, they move up and down (in the vertical example) to reflect the market depth for the given commodity. The LTQ column **308** shows the last traded quantity of the commodity. The relative position of the quantity value with respect to the Price values reflects the price at which that quantity was traded. Column **310** labeled E/W (Executed/Working) displays the current status of the trader's orders. The status of each order is displayed in the price row where it was entered. For example, in cells **312**, the number next to S indicates the number of the trader's ordered lots that have been sold at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in the market, but have not been filled—i.e. the system is working on filling the order. Blanks in this column indicate that no orders are entered or working at

that price. In cells **314**, the number next to **B** indicates the number of the trader's ordered lots that have been bought at the price in the specific row. The number next to **W** indicates the number of the trader's ordered lots that are in the market, but have not been filled—i.e. the system is working on filling the order.

Various parameters are set and information is provided in column **316**. For example, “10:48:44” in cell **318** shows the actual time of day. The **L** and **R** fields in cell **320** indicate a quantity value, which may be added to the order quantity entered. This process is explained below with respect to trading under this system. Below the **L** and **R** fields, in cell **322**, a number appears which represents the current market volume. This is the number of lots that have been traded for the chosen commodity. Cell **324**, “X 10”, displays the Net Quantity, the current position of the trader on the chosen commodity. The so number “10” represents the trader's buys minus sells. Cell **326** is the “Current Quantity”; this field represents the quantity for the next order that the trader will send to market. This can be adjusted with right and left clicks (up and down) or by clicking the buttons which appear below the Current Quantity in cells **328**. These buttons increase the current quantity by the indicated amount; for example, “10” will increase it by 10; “1H” will increase it by 100; “1K” will increase it by 1000. Cell **330** is the Clear button; clicking this button will clear the Current Quantity field. Cell **332** is the Quantity Description; this is a pull-down menu allowing the trader to choose from three Quantity Descriptions. In one embodiment, the pull down menu is displayed when the arrow button in the window is clicked. The window includes NetPos, Offset and a field allowing

the trader to enter numbers. Placing a number in this field will set a default buy or sell quantity. Choosing “Offset” in this field will enable the UR buttons of cell **320**. Choosing “NetPos” in this field will set the current Net Quantity (trader’s net position) as the trader’s quantity for his next trade. Cell **334** are +/— buttons; these buttons will alter the size of the screen—either larger (+) or smaller (—). Cell **336** is used to invoke Net 0; clicking this button will reset the Net Quantity (cell **332**) to zero. Cell **338** is used to invoke Net Real; clicking this button will reset the Net Quantity (cell **322**) to its actual position. It is to be understood that the preferred embodiments are not limited to a trading application that displays these particular buttons. Preferably, the buttons displayed and any parameter, such as quantity, that is set by those buttons are customizable or selectable by the user.

The inside market and market depth ascend and descend as prices in the market increase and decrease. For example, FIG. 4 shows a screen displaying the same market as that of FIG. 3, but at a later interval where the inside market, cells **400**, has risen three ticks. Here, the inside market for the commodity is **43** (best big quantity) at **92** (best bid price) and **63** (best ask quantity) and **93** (best ask price.) In comparing FIGS. 3 and 4, it can be seen that the price column remained static, but the corresponding bids and asks rose up the price column.

As the market ascends or descends the price column, the inside market, working orders, last traded price and/or quantity, or any other item that may be of interest might go above or below the price column

displayed on a trader's screen. Usually a trader will want to be able to see the inside market to assess future trades. The system addresses this problem with a positioning feature. With a single click at any point within the gray area, **342** in FIG. **3**, below the "Net Real" button, the system will re-position the inside market on the trader's screen. As an alternative, this positioning feature may be programmed to be triggered by clicking in any area of the display. Also, when using a three-button mouse, click on the middle mouse button, irrespective of the location of the mouse pointer, will re-position the inside market on the trader's screen. As noted above, the display alternative may be re-positioned based on other items of interest beside the inside market.

The same information and features can be displayed and enabled in a horizontal or other fashion. Just as the market ascends and descends the vertical scale in this preferred embodiment, shown in FIGS. **3** and **4**, the market will move left and right in the horizontal display. The same data and the same information gleaned from the dynamic display of the data is provided. It is envisioned that other orientations can be used to dynamically display the data and such orientations are intended to come within the scope of the present invention.

The specific features of the embodiment of a display as shown in FIGS. **3** and **4** are exemplary of one embodiment of a screen display that can be used with the present invention.

Placing Trade Orders

Next, trading commodities, and specifically, the placement of trade orders using a representative display of the type shown in FIG. 3 is described. Using the display and trading method, a trader would first designate the desired commodity and, if applicable, the default quantities. The trader can then trade by positioning an icon and indicating an action, for example with a click of the right or left mouse button. The term “click” may refer to a “half-click” or button down event for any action depending upon the user’s and/or system designer’s requirements or preferences.

The following equations are used by this exemplary system to generate trade orders and to determine the quantity and price to be associated with the trade order. The following abbreviations are used in these formulas: P =Price value of row clicked (in ticks), R =Value in R field, L =Value in L field, Q =Current Quantity, Q_a =Total of all quantities in AskQ column at an equal or better price than P , Q_b =Total of all quantities in BidQ column at an equal or better price than P , N =Current Net Position, Bo =Buy order sent to market and So =Sell order sent to market.

Any order entered using right mouse button

$$Bo=(Q_a+R)P \quad (\text{Eq. 1) If BidQ field clicked.}$$

$$So=(Q_b+R)P \quad (\text{Eq. 2) If AskQ field clicked.}$$

Orders entered using the left mouse button

If “Offset” mode chosen in Quantity Description field then:

$$Bo=(Q_a+L)P \quad (\text{Eq. 3) If BidQ field clicked.}$$

$$So=(Q_b+L)P \quad (\text{Eq. 4) If AskQ field clicked.}$$

If “number” mode chosen in Quantity Description field then:

$$Bo=QP \quad (\text{Eq. 5})$$

$$So=QP \quad (\text{Eq. 6})$$

If “NetPos” mode chosen in Quantity Description field

$$Bo=NP \quad (\text{Eq. 7})$$

$$So=NP \quad (\text{Eq. 8})$$

Orders also can be sent to market for quantities that vary according to the quantities available in the market; quantities preset by the trader; and which mouse button the trader clicks. Using this feature, a trader can buy or sell all of the bids or asks in the market at or better than a chosen price with one click. The trader also could add or subtract a preset quantity from the quantities outstanding in the market. If the trader clicks in a trading cell—i.e. in the BidQ or AskQ column, the trader will enter an order in the market. The parameters of the order depend on which mouse button the trader clicks and what preset values the trader set.

Using the screen display and values from FIG. 5, the place went of trade orders using the display and trading method is now described using examples. A left click on the **18** in the BidQ column **500** will send an order to market to buy **17** lots (quantity # chosen on the Quantity Description pull-down menu cell **502**) of the commodity at a price of **89** (the corresponding price in the Pre column **504**). Similarly, a left click on the **20** in the AskQ column **506** will send an order to market to sell 17 lots at a price of 90.

Using the right mouse button, for example, an order would be sent to market at the price that corresponds to the row so clicked for the total quantity of orders in the market that equal or better the price in that row plus the quantity in the R field **508**. Thus, a right click in the AskQ column **506** in the 87 price row will send a sell order to market at a price of 87 and a quantity of 150, where 150 is the sum of all the quantities 30, 97, 18 and 5. The quantities 30, 97 and 18 are all of the quantities in the market that would meet or better the trader's sell order price of 87. These quantities are displayed in the BidQ column **500** because this column represents the orders outstanding in the market to purchase the commodity at each corresponding price. The quantity 5 is the quantity preset in the R field **508**.

Similarly, a right click in the BidQ column **500** at the same price level of **87** would send a buy limit order to market for a quantity of 5 at a price of 87. The quantity is determined in the same manner as above. In this example, though, there are no orders in the market that equal or better the chosen price—there are no quantities in the AskQ column **506** that equal or better this price. Therefore, the sum of the equal or better quantities is zero (“0”). The total order entered by the trader will be the value in the R field **508**, which is 5.

An order entered with the left mouse button, for example, and the “Offset” option chosen in the quantity description field **502** will be calculated in the same way as above, but the quantity in the L field **510** will be added instead of the quantity in the R field **508**. Thus, a left click in the BidQ column **500** in the

92 price row will send a buy order to market at a price of 92 and a quantity of 96. The quantity 96 is the sum of all the quantities 45, 28, 20 and 3, 45, 28 and 20 are all quantities in the market that would meet or better the trader's buy order price of 92. These quantities are displayed in the AskQ column **506** because this column represents the orders outstanding in the market to sell the commodity at each corresponding price. The quantity 3 is the quantity pre-set in the L field **510**.

The values in the L or R fields **510**, **508** may be negative numbers. This would effectively decrease the total quantity sent to market. In other words, in the example of a right click in the AskQ column 506 in the 87 price row, if the R field 508 was -5, the total quantity sent to market would be 140 ($30 + 97 + 18 + (-5)$).

If a trader chose the "NetPos" option in the quantity description field **502**, a right click, for example, would still work as explained above. A left click would, for example, enter an order with a price corresponding to the price row clicked and a quantity equal to the current Net position of the trader. The Net position of the trader is the trader's current position on the chosen commodity. In other words, if the trader has bought 10 more commodities than the trader has sold, this value would be 10. NetPos would not affect the quantity of an order sent with a right click.

If the trader chose a number value in the quantity description, a left click would send an order to market for the current quantity chosen by the trader. The default value of the current quantity will be the number entered in the quantity description field, but it could be changed by adjusting the figure in the current quantity field **502**.

An embodiment of the system also allows a trader to delete all of his working orders with a single click of either the right or left mouse button anywhere in the last traded quantity (LTQ) column **512** (this functionality can be provided in any general area of the screen as well or as an alternative). This allows a trader to exit the market immediately. An embodiment of the invention also allows a trader to delete all of his orders from the market at a particular price level. A click with either mouse button in the Executed/Working (E/W) column **514** will delete all working orders in the cell that was clicked. Thus, if a trader believes that previously sent orders at a particular price that have not been filled would be poor trades, the trader can delete these orders with a single click.

A process for placing trade orders using the display and trading method as described above is shown in the flowchart of FIG. **6**. Prior to placing a trade order, the system provides preliminary fields for the input of data, such as the selection of a customer profile, the order quantity, and the maximum trade quantity. Once these preliminary fields are entered and the trader indicates the desire to place a trade order, the system will determine whether the trader performed the necessary actions to conduct a trade. For example, the invention will determine if the mouse pointer was positioned over a tradable cell when the attempt to click trade was performed. If it is determined that a viable trade was requested, the system will create and send a limit order to the exchange at a quantity and price based on the preliminary settings and market prices. The system affords a trader the opportunity to change the order quantity preset buttons. The default

quantities for these power buttons are 1, 5, 10, 20, 50, and 100. However, in this preferred embodiment the trader can alter any or all of these default quantities by performing a right click on each specific button and manually entering a different number quantity.

In step **600**, the trader has the display on the trading terminal screen showing the market for a given commodity. In step **602**, the parameters are set in the appropriate fields, such as the L and R fields and the Current Quantity, NetPos or Offset fields from the pull-down menu. In step **604**, the mouse pointer is positioned and clicked over a cell in the display by the trader. In step **606**, the system determines whether the cell clicked is a tradeable cell (i.e. in the AskQ column or BidQ column). If not, then in step **608**, no trade order is created or sent and, rather, other quantities are adjusted or functions are performed based upon the cell selected. Otherwise, in step **610**, the system determines whether it was the left or the right button of the mouse that was clicked. If it was the right, then in step **612**, the system will use the quantity in the R field when it determines the total quantity of the order in step **614**. If the left button was clicked, then in step **616**, the system determines which quantity description was chosen: Offset, NetPos or an actual number.

If Offset was chosen, then the system, in step **618**, will use the quantity in the L field when it determines the total quantity of the order in step **614**. If NetPos was chosen, then the system, in step **620**, will determine that the total quantity for the trade order will be the current NetPos value—the net position of the trader in the given commodity. If an actual number

was used as the quantity description, then, in step **622**, the system will determine that the total quantity for the trade order will be the current quantity entered. In step **614**, the system will determine that the total quantity for the trade order will be the value of the R field (if step **612** was taken) or the value of the L field (if step **618** was taken), plus all quantities in the market for prices better than or equal to the price in the row clicked. This will add up the quantities for each order in the market that will fill the order being entered by the trader (plus the L or R value).

After either steps **614**, **622** or **620**, the system, in step **624**, determines which column was clicked, BidQ or AskQ. If AskQ was clicked, then, in step **626**, the system sends a sell limit order to the market at the price corresponding to the row for the total quantity as already determined. If BidQ was clicked, then, in step **628**, the system sends a buy limit order to the market at the price corresponding to the row for the total quantity as already determined. The process described above is merely one embodiment and the present invention is not limited to this particular process or to any process.

One commercially available product that incorporates display screens of the type illustrated in FIGS. **2** and **3** is sold under the brand name X_TRADER® by Trading Technologies International, Inc., of Chicago, Ill. Display screens of the type illustrated in FIG. **3** are sometimes referred to herein as MD_TRADER™-style displays. As discussed above,

however, the trading tools of the preferred embodiments can be used with virtually any electronic trading application, unless otherwise noted.

Given the foregoing information regarding graphical user interfaces for electronic trading and their use, a number of trading tools will now be described. One or more of these trading tools may be incorporated into a trading application, for example, to assist the trader and improve the efficiency and timeliness of trading.

Last Traded Quantity Marker

The “Last Traded Quantity Marker,” in accordance with a preferred embodiment, provides an indication of the Last Traded Quantity (LTQ). In a display that includes dynamic market information that is associated with a static price scale, such as the MD_TRADER™-style display, the LTQ marker may move up and down the LTQ column as an associated LTQ price changes. One form of a LTQ marker **700** is shown in FIG. 7, where both a numerical value and a color or shading are used. For consecutive trades at the same price, the LTQ marker **700** may show, for example, either i) a cumulative quantity for all consecutive trades at the Last Traded Price, or ii) the quantity of only the most recent trade at the Last Traded Price. The accumulation of the total quantity for multiple LTQ occurrences is typically gateway (i.e. exchange) dependent. Most gateways, however, will accumulate the quantity. For gateways that do not accumulate the LTQ, a trading application, such as the application program interface illustrated in FIG. 1, may convert the LTQ into a cumulative indicator, if desired.

Generally, as long as a contract continues to trade at the same specific price, the LTQ will accumulate. When a contract trades at a new price, the marker may move beside that price and the quantity displayed inside the indicator box and will reflect the quantity of the last trade only. Should a contract trade at a price where a previous contract traded, the indicator will return to that price level, and the indicator box will again display the quantity of that last trade only (it will not add the newly traded quantity to the quantity that was displayed the last time the marker resided at this price). The indicator, located in the LTQ column **702**, does not simply display the number of the last traded quantity. Rather, the marker also, by residing next to the price (in the price column **704**) at which the last contract traded, indicates to the user the price at which that trade occurred. The LTQ marker **700** is preferably, but not necessarily, associated with the corresponding last traded price **706**. It is not necessary that numerical values for a price or quantity be associated with the marker.

In accordance with a preferred embodiment, therefore, the LTQ marker **700** is a visual indicator of the last traded quantity. Any type of marker may be used as long as it may be recognized by the user as an indicator of quantity. Other indicators, such as color or a graphical indicator, like a sliding scale, thermometer-type scale or speedometer-type scale, may alternatively be used as a marker. The graphical indicators may, but are not required to, include associated numerical values. In further alternatives, however, combinations of indicators may be used to illustrate char-

acteristics of an item of interest, like the LTQ. For example, the quantity itself may be presented numerically or graphically, and color may be used with the quantity indicator to illustrate a trend, such as increasing or decreasing volume or rate of change in volume, or increasing or decreasing price associated with the LTQ. In addition, although described in the preceding few paragraphs as a marker for the LTQ, these types of markers may alternatively be used for any item in the user interface that may be of interest to the user.

In addition, when the user interface is configured to display a consolidated static price scale, for example as described below under the heading Consolidation Control Icon, the LTQ cell **708** may be subdivided into price consolidation increments and a LTQ marker may be shown, for example, as a horizontal line, within the corresponding subdivision of the LTQ cell **708**. The position of the graphical indicator, which in this example is a horizontal line, within the LTQ cell **708** provides a visual indication of the price within the consolidated range at which the last traded quantity changed hands.

Color Coding of Markers

As noted above, items of interest in the user interface may be color coded or highlighted using color or gray scale shades. In a preferred embodiment, the user interface is of the type shown in FIG. 3 having market data associated with a static price scale, such as the MD_TRADER™ interface, and color is used with the LTQ marker to provide a visual distinction between, for example, an increase or decrease in the price value associated with the Last Traded Quantity

(LTQ) from the price value associated with the previous LTQ. In MD_TRADER™, the LTQ may be presented as a highlighted cell in the LTQ column **702**, as shown in FIG. 7, which is displayed at a level that corresponds to the Last Traded Price (LTP) **706**. In a preferred embodiment, the highlighted cell changes colors based on the market's price movements. For example, a LTQ cell **710** may be displayed with a background that is one color, such as blue, when the change in price associated with the LTQ is an increase from the price associated with the previous LTQ **708**. Whereas a LTQ cell **712** may be displayed with a different colored background, such as red, when the change in price from the previous LTQ **708** decreases.

In addition, color may provide additional information about items of interest, like the LTQ. For example, when the commodity at issue has yet to have been traded during that current trading session, the LTQ column **702** may be shown in a particular color, such as gray, and may remain that color until a quantity has been filled. When a quantity has been filled, the cell displaying the first LTQ for that session may be highlighted in a particular color, such as green, signifying neither an up nor down tick from the previous LTQ. Subsequent fills will result in the LTQ cell being highlighted, for the preceding examples, in either a blue or a red color, unless the price level does not change from one trade to another, in which case the cell will remain green until there is a change in the price of the LTQ.

This benefits a trader in that the display of, and the color designation(s) for, the LTQ provides a visual reference of the market's price movements, status or

trends, thereby permitting a trader to quickly absorb additional information, such as the direction of the market's activity. As a result of seeing the changes in the price of the last traded quantities, a trader can more easily determine market status and trends, thereby enhancing the likelihood of the trader entering orders and having those orders filled at desirable prices.

The color-coding of the LTQ appears as a colored cell (e.g., **700**, **708** and **710**) in the LTQ column **702** and corresponds to the price row of that traded quantity. By default in one preferred embodiment, the colored cell will appear in blue when the LTQ ticks upward in price from the previous LTQ, will appear in red for instances when the LTQ ticks downward in price from the previous LTQ, and will appear in green for instances when the price level remains the same from one trade to the next. While these preferred colors are the default settings in one embodiment, the trading application preferably allows a trader to change color designations in accordance with the trader's own preferences. In addition, while certain embodiments have been described with reference to color being applied to a cell, the invention is not limited to embodiments in which color is applied to a cell. For example, color may be applied to any graphical indicator, such as the horizontal line used as a LTQ marker in the preceding section, to illustrate a property of the item of interest.

Overlay of Different Price Feeds

In one embodiment, the trading application provides an "Overlay of Different Price Feeds." The trading application may be X_TRADER®, referenced

above, or any other commercially available product adapted as described herein. In many instances a particular commodity is only traded at a particular exchange. In other instances, however, a commodity may be traded at multiple exchanges. This is one instance when a user may be interested in simultaneous information from different price feeds, i.e. feeds from different exchanges in regard to a particular commodity. As another example, Eurex offers both an inside market stream and a market depth stream. Generally, the inside market stream is faster than the market depth stream. In accordance with a preferred embodiment, the different streams, whether from a single exchange or multiple exchanges, are used by the trading application to populate and display information about the commodity in a trading window.

A number of exchanges offer multiple price streams, but these exchanges often supply only those feeds that are requested by the trader. Each trader may request, for example, a stream of all of the quantities currently available in the market for a specific commodity, known as market depth, or the trader may request to receive only the inside market prices, where the inside market is the highest buy price and the lowest sell price at which there is quantity available for that commodity. This is also known as the best buy and best sell prices. Many traders are focused on these best prices, and therefore do not desire a stream of a market's depth. Thus, several exchanges cater to user preferences by offering different price feeds, while also benefiting by saving on band-width for traders who wish to receive only an inside market stream.

When using the ‘overlay’ feature, the system preferably displays all of the information that it receives, and the display continuously updates the cells. By accepting, or having the ability to accept, multiple feeds or streams, the trader is provided with greater security in knowing that if one feed should become slower or unavailable, the other feed will continue to update market information.

FIGS. 8 and 9 show a network 800 for the transfer of data from an exchange 802 to the client terminal 804 via parallel feeds carrying a first and a second price packet 806 and 808, respectively, through a router 810 and a Gateway 812. The client terminal 804 is running a trading application, such as X_TRADER®, which presents data carried by the feeds to a user. When a disruption in one of the feeds, referred to as a “hiccup” or lost data, occurs in the network, as shown at 814 in FIG. 9, packets from the top feed are prevented from feeding into the trader’s display. A disruption, as the term is used herein, is not limited to a situation in which data is permanently lost, but rather is used generically to also cover instances when data is corrupted, slow or otherwise delayed. Without an auxiliary feed in instances of lost data, the display would be void of prices, and opportunities for trading could be lost. Without an auxiliary feed in instances of slow or delayed data, trading decisions would be made based on out of date information.

Although illustrated as a disruption 814 occurring between the gateway 812 and the client terminal 804, the feed may be disrupted at any point from the exchange 802 to the client terminal 804. Because of the

parallel feed, the display of current information is not interrupted, regardless of the cause of the disruption. Moreover, the parallel feed allows the user to take advantage of speed differences between two feeds and displays the best available information to the user. It should be noted that, although the streams are illustrated as originating from one exchange **802**, the streams may alternatively originate at different exchanges. In addition, while two feeds are typically sufficient, the preferred embodiments are not so limited, and information from more than two feeds may be simultaneously displayed.

In one embodiment of the invention, the 'Overlay Different Price Feeds' can be enabled or disabled by adding or removing a check in a 'Use Inside Market Prices' box in the a Properties dialog box. Other techniques for enabling this feature may alternatively be used. Where multiple feeds are being monitored and displayed, the trading application may provide the user with options for deciding which feed's data will be displayed in instances where the data from the feeds is not the same. For example, in instances where the feeds originate at different exchanges, the user may choose to display the best prices from the different feeds. As a further example, where the feeds originate at the same exchange, information from the most recent packet may be displayed, regardless of which feed carried the last displayed packet. Other alternatives will be apparent upon reviewing the foregoing.

Display of Aggregated Working Quantities

Another preferred embodiment provides a trader with a display of the aggregated quantities being

worked in the market for a trader's buy and sell orders. A trader's total working quantities represent the total unfilled quantities of all the orders that the trader currently has entered but have yet to be filled in the market. For example, the trading application may display the total working buy quantities and the total working sell quantities for the specific commodity being traded and for the specific trader who entered those quantities in the market. FIG. 10 shows, as an example, a display for a trader who has separate working sell quantities of 14, 13, and 1 (at **1000**), and separate working buy quantities of 5, 1, 15, 3, and 1 (at **1002**). While this example utilizes an MD_TRADER™-style trading interface, any type of trading interface may alternatively be used. The trading application calculates the sum of the trader's working sell quantities ($14+13+1=28$) and the sum of the trader's working buy quantities ($5+1+15+3+1=25$) and, in this example, displays the aggregated quantities in cells **1004**. The aggregated working quantities may be displayed in any manner or location that is helpful to the user. In another variation of this embodiment, the user may click directly on either the aggregated buy or sell quantity display cells to delete the working quantities displayed in those cells.

The display of a trader's aggregated working quantities in cells **1004** benefits a trader in that it provides the total exposure from the trader's working quantities. Although the display is dynamic, in that order quantities are continuously updated as new orders are entered and others are filled, the display of quantities at different market prices is limited by the size of the display screen. Thus, it is possible for a trader to have working quantities of which the trader

is not aware at prices that are not visible in the display window. The aggregated working quantities display helps to alleviate this draw-back by showing a trader the cumulative total of the trader's buy and sell working quantity. If the display shows anything but a zero, the trader will know that the trader currently has an unfilled working quantity in the market.

In the preferred embodiment, the display of aggregated working quantities, as shown in cells **1004** in FIG. 10, is presented to the user in conjunction with buttons that may be actuated by the user. As noted above, the user may use an input device, such as a mouse, to click the buttons **1006, 1008**, thereby deleting the working orders associated with the displayed aggregated working quantities. One button **1006** displays the aggregated buy working quantity. The other button **1008** displays the aggregated sell working quantity. The aggregated totals that appear on each button **1006, 1008** are calculated from the non-aggregated working quantities as displayed in a working quantities column **1010**, as shown in FIG. 10. In both the working quantities column **1010** and the aggregated quantity buttons **1006, 1008**, the buy quantity is highlighted, in a preferred embodiment in a color, such as blue, and the sell quantity is highlighted, in a preferred embodiment in a different color, such as red. The user preferably has the option of whether to display the aggregated quantity buttons via, for example in MD_TRADER™, the properties settings window. The quantity buttons appear by default for new sessions. Of course, aggregated working quantities may be displayed by any trading application, as an alternative to the type of display illustrated in FIG. 10.

Dynamic Indicator

Another preferred embodiment provides the user with the ability to paste a dynamic indicator for display in relation to, for example, a static price scale. In one embodiment, a first dynamic indicator column is displayed adjacent to the bid quantity column, and a second dynamic indicator column is displayed adjacent to the ask quantity column. The dynamic indicator may be applied to a dynamic indicator column from a spreadsheet, such as Microsoft EXCEL, or other third party charting or analytical software, to furnish the user with a visual indicator of, for example, a specific price. The display screen may, for example, be an MD_TRADER™-style display generated by the X_TRADER® trading application, although other trading applications and trading interfaces may alternatively be used.

The dynamic indicator is preferably associated with market information. In a preferred embodiment, the dynamic indicator is associated with a price, although it may alternatively be associated with any other item of interest to the user. Color coding may be applied to the dynamic indicator.

When used, for example, with an MD_TRADER™-style display, a dynamic indicator may be associated with a specific price, as set by a trader using the third party software, and displayed in relation to a static price scale. If the dynamic indicator is associated with a price that is outside of the viewable area of the trader's display, it preferably becomes viewable on the screen when the associated price comes into view. Although a preferred embodiment of the invention involves copying and pasting to and from a spreadsheet,

other methods of transferring information may also be used.

Use of this particular embodiment is initiated when a trader enters or pastes a value into a spreadsheet **1100**. For example, the value may be a specific price that the trader wants to monitor, or it may be a dynamic price that includes an attached calculation. The indicator is not limited to use with prices, but alternatively may be used for any item of interest on the trader's display. In the price example, once the value is entered in the spreadsheet, the trader copies the desired price cell(s) from the spreadsheet and pastes the cell(s) in one of the dynamic indicator columns **1102** of the screen, as shown in FIG. **11A**. Upon pasting the cell(s) in the dynamic indicator column, a display marker, also referred to as a dynamic indicator **1104**, highlights a cell in the indicator column **1102** that corresponds to the price calculated in the spreadsheet or other software.

The marker may be anything that is suitable to serve as an indicator for the trader, including, for example, graphical symbols and colors. Thus, although FIG. **11A** shows an entire highlighted cell **1104**, the marker may alternatively be color-based, such as a highlighted or colored foreground, background, border or portion of the cell. It is not necessary that the dynamic indicator occupy an entire cell. For example, in instances where the trading interface includes a static price scale, and the price scale is consolidated, it may be desirable to locate the dynamic indicator at a position within a cell that corresponds to a specific price. In addition, the marker may mark a range of

prices. Preferably, the type of marker is selectable by the user.

Preferably, a link is established from the pasted cell to the spreadsheet **1100** from which the cell(s) was copied. The link gives the trader the ability to change the copied value in the spreadsheet **1100**, resulting in a related change in the pasted value in the dynamic indicator column **1102**. In one embodiment, this may be a two-way link between the trading interface and the third party software, or may link market data from the trading window, such as LTP or any other item of interest, into the spreadsheet or other third party software. Any suitable type of data exchange protocol may be used to embed information from the third party software or to link the dynamic indicator to the third party software. For example, Microsoft OLE 2.0 may be used to perform these functions when using Microsoft Windows applications as the third party software. In a preferred embodiment, Microsoft OLE is utilized to provide a link between a dynamic indicator and a cell from a Microsoft EXCEL spreadsheet. Data exchange protocols in general, and linking and embedding techniques in particular, are well known to those skilled in the art.

The meaning of the pasted dynamic indicator, and whether there is a dynamic calculation attached, is preferably at the decision of the individual trader. For example, the trader may want the dynamic indicator to represent a 'Fair Value Analysis' (average price). This would calculate the average price at which the specific commodity traded throughout the day. The trader would copy and paste the cell, with the attached calculation, into the dynamic display column.

As the average price changed with each newly filled quantity, the dynamic indicator would move up or down the indicator column in conjunction with the appropriate price. When that indicator would move to a price viewable on the screen, the trader then could see a visual indicator of the 'Fair Value' price, and the trader could choose to enter quantity if the trader so desired. Although illustrated with reference to the 'Fair Value' price, it is to be appreciated that any calculation may alternatively be used.

As noted above, the dynamic indicator may also appear in only a portion of the cell. The dynamic indicator may be highlighted, for example, in a different color than the remainder of the cell or the surrounding cells, or may be displayed in time-alternating colors to create a flashing effect. The dynamic indicator may be presented as a highlighted or colored line within a cell. The portion of the cell in which the dynamic indicator appears may be selected to convey additional information, such as a price that falls between prices in a static price scale, for example when price consolidation is utilized. FIG. 11B illustrates a dynamic indicator column **1102** in which a dynamic indicator is shown by highlighting only a portion of a cell **1110**.

The dynamic indicator benefits a trader in that the trader is provided, for example, with the ability to monitor price movements of the trader's own designation, whether those movements are of the last traded price, the 'Fair Value', or any other designated item of interest. By seeing the visible dynamic indicator associated with the trader's designated item of interest, the trader has a better opportunity to enter quantities

at prices that are desirable. In addition, the trader can paste a dynamic indicator while continuing to enter other quantities throughout the trading session, and the indicator will continue to update as long as the session is open. Thus, the trader may find that a desirable price, as shown by the indicator, is available in the market long after the trader originally copied and pasted the indicator. Furthermore, the dynamic indicator may decrease the time it takes for the user to analyze market data by providing the user with a visual cue.

The display of the highlighted dynamic indicator, the color of which, in instances where color is used, maybe selected by the trader through, for example, a properties window, appears in the buy and/or sell dynamic indicator columns on the display. The indicators can be moved to various locations on the display. Of course, more than one dynamic indicator may appear in any dynamic indicator column. In one embodiment that utilizes the MD_TRADER™-style display, the dynamic indicator columns appear by default to the immediate left and right of the buy and sell quantity columns, respectively, as shown in FIG. 11A. It is not necessary, however, that an entire column, row or other display element be devoted to display of a dynamic indicator. The dynamic indicator may alternatively be applied in the display on a cell-by-cell basis or may overlay other displayed information.

Out of Range Indicator

In accordance with a preferred embodiment, the graphical user interface for a trading application provides an indication that an item of interest is outside

the viewable range of the display. The trading application may be X_TRADER®, referenced above, or any other commercially available product adapted as described in this section. Preferably, the out of range indicator also provides a user the ability to cause the display to shift up or down so that the user may view the item(s) of interest that lie outside of the viewable area. Examples of items of interest include, but are not limited to, the user's working orders and market depth information, such as quantities and prices.

In one embodiment, the out of range indicator is an arrow or similar pointing icon, which will indicate to the user that an item of interest lies outside the viewable area and further indicates the direction in which the viewable area needs to move to display the item of interest. Preferably, the viewable area will scroll or jump to the item of interest when the user clicks on or otherwise actuates the pointing icon. Each time the out of range indicator is used, the display may shift to the closest item of interest outside of the viewable area. As an alternative to jumping to the next item of interest, the display may shift row-by-row, column-by-column, price-by-price, or may jump to a new level based upon a selected item of interest.

For example, as shown in FIG. 12A, quantities are entered (and are viewable on the display) at sell prices of 109225, 109250, 109400, etc. If 109525 is the next highest price for which quantity is entered, but that quantity is beyond the viewable area, the trader can use an out of range quantity indicator, illustrated in this example as an 'up arrow' **1200** function, to shift the display up so that the quantity is viewable. Each ensuing use of the 'up arrow' **1200** function will result

in the display of the next highest sell price for which quantity is entered in the market.

Continuing with this example, the same general principles apply when employing the ‘down arrow’ **1202** function. Specifically, in FIG. 12A, quantities are viewable on the trading screen at the buy prices of 108975, 108875, 108825, etc. If 108650 is the next lowest buy price for which quantity is entered in the market, then the trader could use the ‘down arrow’ **1202** function to display that quantity. Each ensuing use of the ‘down arrow’ **1202** function results in the display of the next lowest buy price for which quantity was entered in the market.

By using the out of range indicator (e.g., **1200**, **1202**), which in this example indicates out of range market quantities, the trader can essentially view the entire market depth provided by an exchange. The display of the entire market depth may be limited, for example, by the size of the user’s display screen, or the user’s preferences about the amount of market information that is displayed at any one time. Due to these constraints, it is possible that there may be items of interest, such as market depth or working orders, that the user cannot see. The out of range indicator not only alerts the user to the existence of an out of range item of interest, but also ensures that all such information is viewable via, for example, the ‘up arrow’ **1200** and ‘down arrow’ **1202** function.

When items of interest fall outside the viewable range, the trading application preferably generates cells, for example each with an arrow pointing up or down, as appropriate, at the top and/or bottom of the column related to the item of interest. The arrow cells

are preferably enabled only when an item of interest, like a quantity entered in the market, falls outside of the viewable area. If no items of interest fall outside the viewable area, in one embodiment of the invention, the cells are inactive and may be presented on the display in a solid color without an arrow. As an alternative to the use of buttons with pointing icons, a preferred embodiment allows a user to scroll the market data in a desired direction using a mouse wheel or other user input device.

As noted above, the out of range indicator may alternatively, or in addition, be used to alert the user to out of range working orders. In this example, each time the indicator is used, the display preferably shifts to the user's next working order in the market that is outside of the viewable area. For example, as shown in FIG. 12B and evidenced by the working quantities present in the working quantities column, a trader has quantities entered (and viewable on the display) at sell or offer prices of 109200, 109250, and 109300. If 109550 is that trader's next highest price for which quantity is entered, but that quantity is beyond the viewable area, the trader can use the indicator, in this example an 'up offer arrow' **1204** function, to shift the display up so that the quantity is viewable. Each ensuing use of the 'up offer arrow' **1204** function results in the display of the trader's next highest offer price for which quantity is entered in the market. As stated above, the display alternatively may shift row-by-row, column-by-column, price-by-price, or may jump to a new level based upon a selected item of interest.

The same general principles may apply in regard to working buy orders, by employing a 'down bid arrow' **1206** function. For example, in FIG. 11B the trader has quantities entered and viewable on the trading screen at the buy or bid prices of 109025, 109000, 108975, 108875, and 108825. If 108650 is that trader's next lowest bid price for which quantity is entered in the market, then the trader could use the 'down bid arrow' **1206** function to display that quantity. Each ensuing use of the 'down bid arrow' **1206** function results in the display of that trader's next lowest bid price for which the trader has quantity entered in the market. Regardless of which arrow is being used, the screen will shift to quantities that the trader has entered in the market.

By using the out of range indicator (e.g., **1200**, **1202**, **1204** and **1206**), the trader preferably may view information related to all of his or her working orders. This indicator reduces the potential for missed and forgotten opportunities or exposure by ensuring that all of the user's working orders are viewable via the 'up offer arrow', the 'up bid arrow', the 'down offer arrow' and 'down bid arrow' functions. The pointing icons, or arrow buttons, discussed above may be located at the top and/or bottom of any column of interest, or to the left and/or right side of any row of interest, that includes data that falls outside of the viewable range, including for example working orders that fall outside the viewable range. Other uses for the out of range indicator will be apparent to those skilled in the art upon reviewing this detailed description. Although described above with reference to pointing icons and/or arrow buttons, any type of indicator may

alternatively be used as long as it is capable of indicating to the user that there is information outside of the viewable range.

‘Thermometer’ Indicator

In accordance with a preferred embodiment, the trading application provides a display to the user illustrating the volume of buy and sell quantities, in proportion to each other, in a logical, dynamic manner. The trading application may be X_TRADER®, referenced above, or any other commercially available product adapted as described in this section. In one embodiment, which is advantageously used in a trading application that displays price along a vertical axis, like X_TRADER®, the ‘thermometer’ indicator generates one or more narrow, vertical display columns **1300**, **1302** (“thermometers”), located in proximity to the quantity columns as shown in FIGS. **13A** & **13B**. The thermometers **1300**, **1302** may or may not be associated with a numeric display of the total number of buy and sell orders in the market for a particular commodity. When there is quantity available in the market, the thermometers **1300**, **1302** are preferably shaded in a manner that coincides with the percentage of buy versus sell quantities in the market. For example, if the buy and sell quantities in the market are equal, meaning that 50% of the quantity is buy quantity and 50% is sell quantity, then both thermometers **1300**, **1302** are shaded 50%, as shown in FIG. **13A**. In alternative embodiments, thermometer indicators may represent a relationship between any two items of interest to the user. Although vertical bars are shown in the illustrations, it should be understood that any visual indicator may, alternatively

be used, as long as the indicator is capable of conveying the appropriate information to a user.

These thermometer columns are preferably adjustable in that the user may move the thermometer columns to various locations on the display as logic or user preference dictate. One preferred location, when the thermometer indicator is to represent the volume of buy quantities in relation to the volume of sell quantities, is immediately to the left of the buy quantity column and to the right of the sell quantity column. In this embodiment, the display of the thermometers may begin at the mid-point of the prices displayed on the screen. For example, in FIGS. 13A and 13B, the mid-point is between the prices of 90 and 85. The buy quantity thermometer descends from the mid-point to the lowest price displayed on the screen (45), and the sell quantity thermometer extends to the highest price displayed (130).

As noted above, the two thermometers show the quantity available in the market, with one thermometer each for the buy quantities and the sell quantities. In the illustrated embodiment, both thermometers extend from the mid-point price that is currently on the user's display. The buy thermometer preferably reaches to the lowest price displayed, while the sell thermometer preferably extends to the highest price displayed. The thermometer for the buy quantity descends from the top of the thermometer as the percentage of buy quantity increases. The thermometer for the sell quantity rises from the bottom of the thermometer as the percentage of sell quantity increases. If either the buy or sell quantity is larger

than the other, the thermometers will reflect this difference based on the amount of the disparity. FIG. 13B, for example, reflects a scenario where 95% of the quantity in the market is buy quantity and 5% of the quantity in the market is sell quantity. Therefore, the buy thermometer **1304** is shaded a great deal more than the sell thermometer **1306** to represent the disparity. Although described with reference to a thermometer indicator, any type of graphical indicator may alternatively be used to present the user with information about an item of interest. An alternative to displaying graphical indicators, like thermometers, is to display the market depth numerically, such as an aggregated sell quantity and an aggregated buy quantity, or as a percentage or ratio between buys and sells.

The thermometer indicator benefits a trader by showing the disparity of buy verses sell quantity in the market, thereby providing the trader with a tool to help decide whether to enter orders to buy or sell. For example, if there is a higher percentage of buy quantity in the market, then a greater number of the traders may want to buy, whereas if there is a greater percentage of sell quantity in the market, then a greater number of traders may want to sell. A trader can therefore deduce that with a greater percentage of buy quantity in the market, the trader may have a higher chance of having the trader's sell order filled at a desirable price if the trader were to enter such a sell order. If the percentage of sell quantity was higher in the market, the trader may have a greater chance of having the trader's buy order filled at a desirable price.

Auto Scalper

In accordance with another preferred embodiment, the trading application provides a way to automatically enter offsetting orders. The trading application preferably is X_TRADER® using an MD_TRADER™-style display. Scalping is a term that is well known in the trading of commodities and it refers to a trading technique in which the trader trades for relatively smaller gains over a short period of time. In this embodiment, the trading application facilitates scalping by providing the user with an automatic order entry mechanism, embodiments of which are further described below. Preferably, automatic scalping is activated based on a user input, such as simultaneously pressing the control key and the scroll wheel on the user's mouse to manipulate a pair of indicator bars in the form of horizontal lines. Other actuating mechanisms may alternatively be used, including for example using a dialog box generated by the trading application or by actuating a scalping icon displayed on the user interface.

For this embodiment in which a mouse input is used to position parallel horizontal lines, the indicator bars define a price range where buy and sell quantities may be automatically entered when a similar such quantity is manually entered and filled. More specifically, this feature automatically enters sell quantities when a trader's manually entered buy quantity is filled. Likewise, this feature will automatically enter buy quantities when a trader's manually entered sell quantity is filled. The indicator bars move in relation to a static scale or axis representing prices. In a preferred embodiment, the indicator bars span

the buy column, the sell column, and the price column, and they begin together at the mid-point of the prices displayed on the trader's display screen. In FIG. 14A, that mid-point **1400** is between the prices of 90 and 85. When the trader enables this embodiment and scrolls the wheel on the trader's mouse up, the indicators move further apart, leaving a greater number of prices within the range of the indicator bars **1402**. When the trader scrolls the wheel down, the indicator bars move closer together (nearer to the mid-point), reducing the number of prices within the indicator columns, as shown in FIG. 14B.

The order that is automatically entered is preferably for the same quantity as the trader's last buy or sell fill. Additionally, the order that is automatically entered is entered at a particular price or prices, depending on the preferences and/or practices of the trader, within the range of the indicator bars. In one embodiment, the order that is automatically entered is, in the case of a sell order, at the lowest price above the inside market within the range of the indicator bars, and in the case of a buy order, at the lowest price within the range of the indicator bars. Alternatively, the order that is automatically entered, may be at a price or prices calculated pursuant to any algorithm. For example, the quantity ordered may be evenly spread among the prices above (in the case of a sell order) or below (in the case of a buy order) the inside market and within the range of the indicator bars. The preferred embodiments are not limited to any particular technique for determining the price or prices at which the automatic order is entered. In a preferred embodiment, the user may set the rules for

exactly how a duplicate order or orders are sent (whether at the best price or some other price).

For example and as shown in FIG. 14A, the indicator bars **1402** are set with the highest price at 110 and the lowest price at 65. The inside market, as indicated by the black line, is a buy price of 100 and a sell price of 105. If a trader using the automatic scalper enters quantity in the buy column and that quantity is filled, in one embodiment the system will automatically enter a duplicate quantity in the sell column at the lowest price above the inside market and within the range of the indicator bars, which in this example would be a sell price of 105.

A trader's position may be defined as the difference between the total quantity of the commodities bought and quantity of the commodities sold, and the trader is considered to have a long position when the quantity bought is greater than the quantity sold and a short position when the quantity sold is greater than the quantity bought. The more quantity the trader owns, the longer the trader's position will be. Conversely, the more quantity the trader sells, the shorter the trader's position will be. It may be desirable to have neither a long nor short position, referred to as a closed position, at the end of each day's trading session. If the buy quantity that the trader has entered in the market is filled, thus giving the trader a long position, the system, if actuated by the user, may automatically enter a duplicate sell quantity, which when filled will close the trader's position. Likewise, if the sell quantity that the trader has entered in the market is filled, the system may automatically enter a duplicate buy quantity, which when filled will close

the trader's position. The automatic scalper automatically and, preferably, immediately enters a duplicate buy or sell quantity, which when filled will close the trader's position, preventing the trader from carrying a long or short position for an extended period of time.

In an alternative embodiment, the automatic scalper embodiment may be used to set one range, using, for example, indicator bars, for buying quantity and another range for selling quantity, at the same time. For this embodiment, the automatic scalper automatically quotes both sides (buy and sell) within the ranges determined by the user. In another alternative embodiment, multiple automatic scalping ranges, using different pairs of indicator bars, may be active in a single trading window. For this embodiment, the different ranges may be distinguished by using, for example, different colors for the different pairs of indicator bars.

Price Level Reasonability Check

In accordance with another preferred embodiment, the trading application provides a user with the ability, referred to as the Price Level Reasonability Check ("PLRC"), to prevent the entry of any order in the market at a price that is a specified number of ticks away from the Last Traded Price (LTP), or at a price that is a specified percentage different from the LTP. A tick can be anything, but is generally used in this detailed description as the minimum change in a price value that is set by the exchange for each commodity (e.g., \$0.01, \$0.05, \$0.10, or any other value). The trading application may be X_TRADER®, referenced above, or any other commercially available product adapted as described in this section. The

PLRC may be enabled and configured by either a user, such as a trader or an administrator. For systems in which an administrator enables the PLRC, the PLRC may be applied uniformly to all client terminals on a network, or it may be adjusted on a case-by-case basis, thereby accounting, for example, for the experience level of the trader.

The PLRC may preferably be enabled on a commodity-by-commodity basis. For example, in FIG. 15A, a trader has entered a value of five to designate the maximum number of ticks from the LTP at which the trader is willing to enter an order in the market. As shown in FIG. 15B, the market for the commodity being traded has a tick value of five. Therefore, as dictated by the LTP of 90, the tick increment of five, and the PLRC value of five, should the trader choose to sell the commodity, the trader can enter an order at a price of 90, 85, 80, 75, 70, and/or 65. As shown in FIG. 15B, 90 is the last traded price, and the prices of 85, 80, 75, 70, and 65 are the sell prices that are less than or equal to five ticks away from that LTP. If the trader attempts to sell quantity at a price of 60 or below, the trader would be restricted from doing so because the price is beyond what the trader's PLRC value will allow. The same trader could buy the commodity at a price of 90, 95, 100, 105, 110, and/or 115. Each of these prices is within five ticks (the PLRC value) of the LTP. If a trader attempts to buy quantity at a price of 120 or higher, the trader would be restricted from doing so because the price is beyond what the trader's PLRC value will allow. The PLRC function may alternatively allow a trader or administrator to enter a percentage instead of a number of ticks to designate the maximum deviation from the

LTP at which the user is allowed to enter orders in the market.

In an alternative embodiment, the trading application may provide a volatility adjusted PLRC function. In this embodiment, the PLRC dynamically increases or decreases the number of ticks (or percentage) away from the LTP within which a user may enter orders. The increase/decrease, which may be set by the user or a system administrator, is preferably based on volatility. For example, a trader may set the trading application to dynamically increase the PLRC by a specified amount if the volatility is greater than a specified amount.

The inclusion of the PLRC function limits the possibility of the trader having the working quantity filled at less desirable prices. The inside market is those prices, for which there is quantity available in the market, that are considered the best buy and sell prices available. The best buy price is the highest buy price that has quantity in the market, while the best sell price is lowest sell price that has quantity in the market. Generally, the LTP will be at or near to that inside market. The LTP is used as the center price from which the PLRC begins and allows quantity to be entered at a limited number of price levels either above or below that LTP level.

In one preferred embodiment, where the trading application is X_TRADER®, the PLRC is preferably enabled through the ‘Options’ display, an example of which is shown in FIG. 155B, by checking the “Price Level Reasonability Check” option box **1500** and then entering a value in the adjacent box **1502**, designating

the number of ticks that quantities can be filled beyond the last traded price value. Although the PLRC is described with reference to setting a boundary on acceptable prices for working quantities, the same technique may be used to constrain many other trading activities, such as the quantity associated with any order or to limit the total quantity being quoted by any individual user. Implementation of these variations is analogous to the implementation of PLRC described above and those skilled in the art can implement the variations based on this detailed description.

Group Positioning and Automatic Grid Positioning

In accordance with another preferred embodiment, the trading application may re-position any item of interest within the trading interface. In one embodiment, the trading application tracks the market's activity by automatically centering, for example, the inside market or the Last Traded Price ("LTP") on the display with respect to a static axis or scale of prices. Preferably, any other item of interest in the trading interface may serve as the basis for positioning information within the display.

The trading application preferably is X_TRADER®, using an MD_TRADER™-style display. In a preferred embodiment, the LTP is displayed in the LTP column and is indicated by a highlighted cell directly next to the price cell corresponding to the most recently filled quantity. The LTP cell preferably also contains an indication of the quantity of the most recent fill. The inside market is indicated by a line spanning both the buy and sell columns and is positioned between the highest buy price at which there

is quantity currently in the market (the best buy price) and the lowest sell price at which there is quantity currently in the market (the best sell price).

Preferably, a user may designate any item of interest as the basis for the positioning function, such that, upon positioning, the item of interest will be moved to a predetermined location on the user's display. Automatic positioning may be triggered either by a timer, or by monitoring movement of the item(s) of interest about the display. Two items of interest to many traders are the inside market and the LTP. Thus, in one embodiment, the user may select one of these items for automatic re-positioning. When either the highlighted LTP cell or the inside market line is outside of the viewable area of a trader's display, or is more than a predetermined distance away from a location on the display, the LTP cell or the inside market line will automatically be placed at a predetermined location on the display. In a preferred embodiment, automatic positioning parameters may be selected by the user from the 'Options' display. The user may choose, for example, whether to re-position the display after a designated number of seconds, when the LTP is a designated number of cells from the top or bottom of the trader's display screen, or when the inside market is a designated number of cells from the top or bottom of the trader's display screen.

In addition, a trading application may present multiple trading windows to the user simultaneously. In accordance with a preferred embodiment, the automatic positioning tool may be applied globally to any number of open trading windows. Preferably, a dialog box or menu item may be used to enable the user to

group or link, for purposes of re-positioning, any number of trading windows. In accordance with one embodiment, at least one of the linked trading windows becomes the master, and the other linked trading window(s) will be re-positioned whenever the master trading window is re-positioned. For example, one of the trading windows may be designated by the user as the master trading window by selecting “re-position all,” or any similar designation, from a menu or dialog box. This may have the effect of re-positioning all open trading windows when the master trading window is re-positioned. The user may choose to have one or more trading windows ignore the re-positioning command by selecting “ignore,” or any similar designation, from the menu or dialog box. This group re-positioning feature may be used in conjunction with the automatic re-positioning tool or with manual re-positioning (such as through the click of a center mouse button or the use of any input device). Other techniques for grouping trading windows will be apparent to those skilled in the art upon review of this detailed description.

In a preferred embodiment, the positioning tool serves to center the item of interest (such as the LTP or the inside market) on the display. As shown in FIG. 16A, the LTP is displayed in the LTP column **1602** and is indicated by a highlighted cell **1600** (the color of which maybe designated by the trader). This cell **1600** appears next to the price cell **1604** corresponding to the most recently filled quantity. The inside market is indicated by a solid line spanning both the buy **1608** and sell **1610** columns, and is between the highest buy price at which there is quantity currently in the market and the lowest sell price at

which there is quantity currently in the market. FIG. 16B is a display showing how a trader may select and manipulate the automatic grid centering feature. Although presented in FIGS. 16A and 16B as being applied to a scrolling vertical scale, it should be understood that the preferred embodiments are not so limited. Rather, automatic positioning may be applied regardless of the direction of movement or the number of dimensions in which information is displayed.

As quantities are entered and filled in the market, the LTP and inside market change to indicate the price of the last filled quantity and the most recent best buy and sell prices. In a volatile market, a large number of quantities can be filled in a relatively short period of time, resulting in a continuous fluctuation of the LTP and inside market. The LTP and the inside market are two indicators that a trader may use to understand at what prices other traders find a commodity to be most desirable. A trader may use automatic positioning to always have a visual reference of where the market is trading, increasing the likelihood of entering quantities and having those quantities filled at desirable prices. In addition, automatic positioning may be used in conjunction with manual positioning. In other words, it is preferable that by enabling automatic positioning, the user is not thereby precluded from manually re-positioning the display.

Highlight Mid-Point of Last Re-Position

In accordance with a preferred embodiment, a trader may emphasize the mid-point of prices and/or quantities entered in the market at the time of the last re-position event. Preferably, a re-position event centers the display around the inside market, where

the inside market is the highest buy price and the lowest sell price for the commodity being traded for which there is quantity in the market, or alternatively, a re-position event may center the display at any price and/or quantity, if so desired. Furthermore, a re-position event does not need to center on any particular price, but may ensure that a particular price, or other item of interest, is positioned at a predetermined location, or within a range of locations, on the display.

In the preferred embodiment, the mid-point is designated by a bold line that spans the columns of the display screen, or in another embodiment, the mid-point may be designated by a color, arrow, text, and so forth. Preferably, the exact location of the mid-point line is dependent on the number of the price rows that are displayed between the best buy and best offer price rows (at which quantity is available) at the time of the last re-center event. Alternatively, the location of the midpoint line may be dependent on the quantities of a portion, or all, of the buy and sell orders, or may be dependent on the combination of price and quantities of the portion or all of the buy and sell orders. In yet another alternative, a bold line representing a particular price level may be displayed in association with any item of interest to the user, to thereby adjust the content of the trading interface to the user's preferred range.

Of course, markers other than a line may alternatively be used. For example, like many of the foregoing embodiments, the marker may be highlighting, a color or a graphical indicator disposed upon the display at the desired location. According to this embod-

iment, a trader may benefit from the visual representation of the discrepancy between the best bid and offer prices currently in the market.

According to the preferred embodiment, when the number of price rows between the best bid and best offer price rows (where quantity is entered) is an even number (or zero), the mid-point line is displayed between the middle values, with these being the highest buy (bid) price and the lowest sell (offer) price that are displayed in the window. For example, in FIG. 19A, the best bid price is 75 and the best offer price is 100. In this example, the display for the product is traded in ticks in increments of 5. As a result, the prices that are displayed between the best bid and best offer prices are 80, 85, 90 and 95. Because the total number of prices between the best bid and best offer is an even number, the mid-point line **1800** is displayed between the highest bid price of 85 and the lowest offer price of 90. Other methods may alternatively be used to determine the mid-point of an even number of rows, cells or columns.

In addition, according to the preferred embodiment, when the number of price rows between the best bid and the best offer prices (where quantity is entered) is an odd number, the mid-point line is displayed in the top of the cell that signifies the middle price value of the prices displayed between the best bid and best offer prices. For example, in FIG. 19B, the best bid price is 85, and the best offer price is 105. The display for the product being traded ticks in increments of 5. As a result, the prices that are displayed between the best bid and the best offer are 90,

95 and 100. Because the total number of prices between the best bid and best offer is an odd number, the mid-point line **1902** is displayed above the price row of 95 because 95 signifies the middle price value of the prices displayed between the best bid and best offer prices. It should be understood that the mid-point line **1902** may be displayed below or in the middle of the price row of 95 to indicate the middle price value. Other methods may alternatively be used to determine the mid-point of an odd number of rows, cells or columns.

While the preferred embodiment utilizes an MD_TRADER™-style display with a vertical static price axis or scale, this trading tool may be utilized with any display in which market information, such as bids, asks and/or working orders, are displayed relative to a static scale or axis of prices. It is not necessary that the scale or axis be vertical or even two-dimensional. Rather, the market information may be displayed horizontally, at an angle, n-dimensionally, or in any other fashion.

The display of the mid-point line may be enabled through an 'Options' display, an example of which is shown in FIG. 19C, by clicking the box **1906** directly to the left of the 'Highlight Midpoint of Last Re-center' option. Other techniques known to those skilled in the art, such as selecting this tool from a menu, may alternatively be used. Also, highlighting the mid-point may be applied to a variety of applications where the trader would like to highlight a midpoint that corresponds to prices and/or quantities, or any other item of interest.

Drag and Drop of Working Quantities

In accordance with another preferred embodiment, the trading application permits the trader to change the trader's working orders by dragging and dropping working quantities from one price level to another price level vis-à-vis a static price scale or axis. The trading application preferably is X_TRADER®, using an MD_TRADE™-style display. When using an MD_TRADER™-style display to drag and drop a working order, in one embodiment, the trader clicks on an active cell within the working quantity column. This activates the drag and drop feature and allows the trader to manipulate the cell by moving the cell on the trader's trading screen. Such a manipulation is commonly referred to as "dragging" the chosen data. Prior to releasing the mouse button, a trader drags the working order by moving the cursor to a new cell in the working quantity column. The trader then releases or "drops" the data in a new cell. In a preferred embodiment, the ability to drag and drop working orders as described herein is an option that may be turned on or off by the user for each individual trading window.

At the point the data is dropped, the previous quantity may be deleted from the original price and a new quantity entered at the price associated with the cell in which the new working quantity was dropped. The quantity displayed in either the buy or sell column that corresponds to the traders working quantity also moves to the newly selected price level when the drag and drop function is performed. Any approach may be used to change the user's working orders. For example, rather than resulting in the deletion of an existing working order and the entry of a new working order, a single cancel and replace, as known to those

skilled in the art, may be used to change the user's working orders.

The ability to drag and drop working quantities, as displayed in the working quantities column, can be used by a trader who is not satisfied with the current price at which such quantity is entered in the market. The trader is given the capability of changing the price level at which the trader's quantity is entered without having to both delete and re-enter the quantity, resulting in a valuable time savings by simply dragging and dropping that quantity.

Preferably, the drag and drop feature makes it possible for a trader to move the entire working quantity of a single cell from one cell to another cell in the working quantity column when that quantity actually consists of multiple orders. For example, if a trader's working quantity is 30 at the price of 102.54 (**1700**), as shown in FIG. 17, that quantity may actually consist of three separate 10-lot orders, where a lot consists of multiple quantities that are traded together. Should the trader drag and drop that working quantity to the price of 102.57, the entire quantity of 30 (all three lots) will move cohesively to the new price level. Although the quantities were entered separately, once entered, they are treated as a cohesive whole.

The ability to drag and drop an entire quantity, regardless of the number of orders associated with that quantity, benefits a trader in that the trader does not need to constantly change the trader's quantity setting. The trader also does not have to repeat the drag and drop action for each order. For example, a trader may be trading at a quantity of 10, and therefore every time the trader enters a quantity in the

market, the trader is entering a 10-lot order. If the trader wants to enter a quantity of 30, the trader can either change the quantity setting or click in the appropriate cell three times, thus entering three separate 10-lot orders in the market. Should the trader choose to drag and drop the working quantity from one price level to another, all of the working quantity associated with the cell and price level at which the drag and drop is performed will be moved to the new price level. As a result, the trader does not have to perform three separate drag and drop actions and valuable time can be saved, which could help to ensure that the quantities are entered and filled at their intended prices.

The display of a trader's working quantity appears in the working quantity column in a cell that corresponds to the price at which the quantity was entered. The display of the trader's working quantity remains visible on the trading screen until the quantity entered is completely filled, at which time the display of that specific working quantity will be removed from the working quantity column, or the order is canceled or deleted. In one embodiment of the invention, the cell in which the working quantity is displayed includes a 'W' followed by a value that indicates the quantity that is currently working in the market. The cell also contains a 'B' or an 'S' followed by a value that indicates how much of the original working Buy or Sell quantity has been bought or sold. Although described with reference to a working quantity column, the embodiments are not limited to trading interfaces that display working quantities in a column, but rather the teachings of this section may be applied to any type of display of working quantities.

In one preferred embodiment of drag and drop, nothing changes with respect to a user's pending working orders until the user releases the mouse button, keypad or other input device over the desired location on the trading interface. This feature allows the user to maintain his/her place in the trading queue for the earlier entered order. In an alternative embodiment, the new order is entered as soon as the mouse icon comes to rest in an appropriate area of the trading interface.

Another alternative embodiment allows drag and drop of working quantities when price consolidation is enabled. Any appropriate algorithm may be used to allocate the new order(s) over the consolidated price range. For this embodiment, the user preferably may select, such as through the use of a dialog box, the desired allocation algorithm. For example, all the "dropped" orders may be entered at one price, such as the price shown on the consolidated scale, or the working quantity may be equally distributed over the consolidation range associated with the location where the orders are dropped, or each working order may be moved by the increment on the consolidated price scale between their original location and the location at which the orders are dropped.

Yet another alternative provides a user with the ability to enable automatic modification of the quantity of the order entered at the location where the working order is dropped. For example, as noted above, working orders may remain working until the input device (e.g. mouse button) is released. In this case, a working order may be filled or partially filled during the drag and drop process. Preferably, the user

may select, such as through a dialog box, what will happen to the “dropped” order in this situation. For example, if the working order is filled during drag and drop, the user may prefer that no new order be entered at the new price. Or, if the working quantity is partially filled, the user may prefer that only the remaining quantity be entered at the new price. In this manner, the “dropped” order may be automatically modified in accordance with user preference.

Average Price of Working Quantities

In accordance with a preferred embodiment, a display shows the average price for a trader’s working buy and sell quantities that are entered in the market. A trader’s working quantities represent the unfilled quantities of all the orders that the trader currently has entered, but not filled in the market. Preferably, the display shows the average price of the total working buy quantities and the average price of the total working sell quantities for the specific commodity being traded and for the specific trader who entered those quantities. For this embodiment, the average working prices may be displayed using, for example, highlighting, color, or a graphical indicator associated with a static price scale or axis, if such a scale or axis is displayed. The display may or may not include the actual numerical value of the average price.

In an alternate embodiment, a distribution of the prices for the trader’s working buy and/or sell quantities that are entered in the market is displayed. In this alternative embodiment, the average price might also be displayed in or around the displayed distribution of the prices. It should also be understood that

the average price and/or the distribution of prices may be displayed in a text format, displayed in a color format (e.g., a color indicator), displayed in a graphical format (e.g., using text and color), and so on.

For example, FIG. 18 shows a screen for a trader who has two working buy quantities at the market price of 96, eight working buy quantities at a price of 95, and two working buy quantities at a price of 94 (1800). Preferably, the average price of those working buy quantities is calculated by dividing the total price of the working quantities from the sum of the quantities and that average will be displayed as described below. In the preferred embodiment, the average price of the working buy quantities is calculated as follows (although, the average price may be calculated using other known types of statistical and/or numerical analysis):

Total Price of Working Buy Quantities/Total Buy Quantity=Average Price of Working Buy Quantities:

$$((2 \times 96) + (8 \times 95) + (2 \times 94)) / (2 + 8 + 2) = 95$$

$$(192 + 760 + 188) / 12 = 95$$

$$1140 / 12 = 95$$

Preferably, the same calculation is utilized to determine the average price of the working sell quantities. Using the illustration from the example above, FIG. 18 also shows a screen for a trader who has four separate working sell quantities at the market price of 101, two working sell quantities at a price of 100, and four working sell quantities at a price of 99

(1802). The average price of the working sell quantities are displayed as described herein and that price is calculated as follows:

Total Price of Working Sell Quantities/Total Sell
Quantity=Average Price of Working Sell Quan-
tities:

$$((4 \times 101) + (2 \times 100) + (4 \times 99)) / (4 + 2 + 4) = 100$$

$$(404 + 200 + 396) / 10 = 100$$

$$3005 / 10 = 100$$

Preferably, the calculation of the average price of the working quantities is on a contract-to-contract basis, meaning that separate average prices are calculated and displayed for each separate commodity in which the trader has working quantity entered.

Preferably, the display of the average price and/or distribution of prices of a trader's working buy and sell quantities can be used to compare the trader's average price against all other current buy and sell quantities entered in the market for the commodity. This function can benefit a trader by helping to ensure that the trader is trading at the most desirable prices.

In the preferred embodiment, the display of the average price for a trader's working quantities appears as two separate cells within the display—one displaying the average buy price **1804** of the trader's working sell quantities and the other the average sell price **1806** of the trader's working buy quantities. In the preferred embodiment, the average buy price is displayed at the bottom of the working quantities column and the average sell price **1806** is displayed at the top of that column, as shown in FIG. 18. Moreover,

in the preferred embodiment, the price in the average sell price cell is highlighted in red and the price in the average buy price cell is highlighted in blue. Although, it should be understood that the average sell price and the average buy price can be displayed anywhere on the screen, and the average sell price and average buy price may be displayed textually, in any color, both textually and in a color, and so forth.

Coding of Blank Spots

In accordance with a preferred embodiment, cells in the buy and sell columns of the display that correspond to prices at which there is no quantity entered in the market are visually distinguished from those cells at which such quantity is entered. The buy and sell price levels for which there is not corresponding quantities are designated as “blank spots” **2000**, and in the preferred embodiment appear in a different shade than populated cells as a means of providing a better visual representation of where the market is trading, as shown in FIG. **20A**. The blank spots **2000** may appear in a lighter shade or darker shade than populated cells, a different color, or a different texture such as hatching from those cells where there is quantity entered. Preferably, as new quantities are entered into the market, and existing quantities are filled and removed from the market, the blank spots **2000** change accordingly. In addition, it is preferable that the user be able to select the manner in which blank spots are displayed.

According to an embodiment, a trader may benefit in that the visual difference between buy and sell cells that contain quantity, verses those that do not contain

quantity, makes it easier for the trader to quickly recognize whether quantities are available in the market at a particular price. Thus, a trader interested in buying quantity has an enhanced display of where such quantity is available, and a trader interested in selling quantity can more easily gauge where other traders are selling the commodity.

In the preferred embodiment, color coding may appear in the buy and sell columns of the display at price levels at which there is no quantity currently in the market. The buy and sell cells that correspond to these price levels appear in a visually different manner than those cells at which such quantity is entered. Color coding may be enabled through a 'ColorCode Blank Spots' field of an 'Options' display, shown in FIG. 20B, by checking the box **2002** immediately to the left of the blank spots option.

In another preferred embodiment, color coding and/or shading may be applied not only to cells without quantity, but also to cells in which the quantity falls below a threshold. Preferably, the threshold may be set by a user or an administrator. In addition, the user may set different thresholds either within one trading window or across multiple trading windows. When different threshold levels are utilized, it is preferable that each threshold value be assigned a distinct color so that the user may quickly recognize the meaning of the color coding.

Display of Net Price of Open Position

In accordance with a preferred embodiment, a trader is provided with a display of the net price of the working buy and sell orders. A visual indicator such

as text, color, a combination of text and color, or a graphical indicator is used to highlight to the trader the net price of working buy and sell orders. The graphical indicator may take any form, including a line or even a colored pixel.

In one embodiment, it may be useful to display the net price open position, where a position is the difference between the number of orders bought (a long position) and the number of orders sold (a short position). A trader's position is open when the number of orders bought or sold is not equal. If these orders are equal, the trader's position is considered closed. When orders are traded on an exchange, it is possible for a trader to receive multiple fills, for multiple quantities, and at different price levels for the quantities that make up the trader's orders. This feature incorporates the price levels of these multiple fills to determine the net price at which the fills occurred. The trader can then use this net price to gauge whether trading out of a position would result in a realized gain, loss, or scratch (neither a gain nor a loss).

To determine the net price of a trader's open position, this embodiment divides the total price of the quantity that has been filled by the total number of orders either bought or sold (a.k.a. the trader's current position). For example, a trader who purchased 10 contracts of a commodity (4@ 99, 2@ 100, and 4@ 101) would have a long 10 position, meaning that the trader would need to sell 10 contracts in order to close the trader's position. The net price of the trader's filled quantity would be 100, and would be calculated as follows:

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Total price of Filled Quantity/Current Position=Net Price of the Open Position

$$(4@ 99+2@ 100+4@ 101/110=100$$

$$(396=200=404)/10=100$$

$$(1000)/10=100$$

Based on the calculation above, the value of 100 is displayed as the trader's net price of the trader's open position. The net price can be displayed in one of several manners, which include, without limitation, a box **2100** around the net price's price level cell as shown in FIG. 21, a separate column for the display of the net price, a box across the net price's price level, or a distinguishing color for the net price. If a particular trader has a long position as the result of buying quantity, any additional quantity that is bought will cause the net price of the trader's open position to be re-calculated. Preferably, should that trader sell quantity, the trader's position will change but the net price that is displayed will remain constant. Any additional buy quantity will subsequently change both the trader's position and the net price of that position, while all subsequent sell quantity will adjust the trader's position only, and will do so only until the position is closed. Should a trader begin a trading session with a short position as a result having the sell quantity(s) filled, all of the trader's subsequent sell quantity will change both the position and the net price of the trader's open position when such sell quantity is filled. Any buy quantity that has been filled will not change the net price, but will instead affect only the position and only until that position has been closed. As a result, it will be easier for a

trader to gauge where (at what price) the trader needs to buy or sell when the net price of the trader's long position is only allowed to increase as the position increases and the net price of the short position is only allowed increase as the position becomes shorter.

A trader may benefit in that the visual representation of the net price of the trader's open position reduces or eliminates the need to mentally calculate such a price when, depending on the market's volatility, the price may change repeatedly. A trader who has had consecutive buy quantities filled will have a long position and will see a display signifying the net price of that long position. Any sell quantities that are filled will not be calculated into that net price. Likewise, a trader who has consecutive sell quantities filled will have a short position and will see a display signifying the net price of that short position. Any buy quantities that are filled will not be calculated into that net price. The trader benefits from such a feature in that the trader will always have a display of the net price of the trader's primary position (either of all of the trader's buy quantities or all of the trader's sell quantities), which will therefore provide the trader with a better indication of the price level at which the trader needs to buy or sell additional quantities to make a profit and close the position. Alternatively, the average price of the trader's open position may be calculated based upon both buy and sell orders filled.

The marker indicating the net price may be anything that is suitable to serve as an indicator for the trader, including, for example, graphical symbols, numbers and/or colors. Thus, although FIG. 21 shows

a cell **2100** surrounded by a colored, shaded or highlighted box, the marker may alternatively be graphical, or numerically displayed elsewhere on the user interface. It is not necessary that the marker occupy an entire cell. For example, in instances where the trading interface includes a static price scale, and the price scale is consolidated, it may be desirable to locate the marker at a position within a cell that corresponds to a specific price. Preferably, the type of marker is selectable by the user.

Consolidation Control Icon

In accordance with a preferred embodiment, a trader may consolidate price information, or other useful information, by a control icon that is displayed to the user on the same interface that is used for trading. Consolidation of price information is described in U.S. patent application Ser. No. 09/971,087, incorporated above. In the embodiment described herein, the control icon is preferably presented to the user on the same screen that is used for trading, thereby allowing the user to maintain his or her view of the market information as the control icon is adjusted.

In a preferred embodiment, the control icon is a slide control **2200**, shown in FIG. **22**, which can be dragged from left-to-right or right-to-left, but in alternate embodiments may include a dial that can be turned in the clockwise or counter-clockwise direction or any other control icon that may be actuated through the graphical user interface of the trading application. According to the preferred embodiment where price information may be consolidated through the slide control **2200**, when the slide control **2200** is dragged to the far left, the display presents numbers

in a one-tick, or uncompressed, progression. Price information may also be displayed in another manner besides ticks (such as currency), depending on the manner in which each exchange provides the price information and user's preferences. As the slide control **2200** is moved to the right, the control consolidates the prices and any other associated values (e.g., bid/ask quantities, working orders, etc.), thereby displaying values that become progressively more consolidated the further the slide control **2200** is moved to the right, and resulting in the display of prices in multiples of ticks. Preferably, each increment of the control icon may be selected by the user, such as through a dialog box or any other means known to those skilled in the art.

Although described with reference to a vertical price scale that is subject to consolidation, the preferred embodiments are not limited to consolidating a price scale, nor are they limited to consolidating a vertical display element. Rather, any numerical sequence is subject to consolidation, regardless of its orientation or number of dimensions. The preferred embodiments allow user selectable consolidation through an icon presented on the user interface.

The consolidation of price information by adjusting a control icon benefits a trader in that it quickly allows for a greater number of prices and/or associated values such as bid/ask quantities and working orders to be displayed at any given time. Thus, a trader has a greater chance of not only seeing a majority, if not all, of the quantity entered at those prices, but the trader also has a greater spectrum of prices in which to enter the trader's own quantities.

Conclusion

It should be understood that the above description of the preferred embodiments, alternative embodiments, and specific examples are given by way of illustration and not limitation. For example, the features described herein could be incorporated into a variety of displays. Many changes and modifications within the scope of the present embodiments may be made without departing from the spirit thereof, and the present invention includes all such changes and modifications.

We claim:

1. A method for repositioning a static price axis on a graphical user interface for displaying market information of a commodity being traded at an electronic exchange, the method comprising:

receiving market information relating to a commodity from an electronic exchange via a computing device, the market information comprising an inside market with a current highest bid price and a current lowest ask price for the commodity;

displaying a first plurality of price levels along a static price axis on a graphical user interface of a display device associated with the computing device, where the first plurality of price levels range from a lowest value to a highest value along the static price axis;

in response to an input command received via an input device associated with the computing device, adjusting the first plurality price levels among a range of price levels to an adjusted

plurality of price levels including the first plurality of price levels;

displaying a bid and ask display region on the graphical user interface, the bid and ask display region comprising a plurality of locations corresponding to the first plurality of price levels displayed along the static price axis, wherein each location corresponds to one of the first plurality of price levels, and wherein a number of the plurality of locations changes according to adjusting the first plurality of price levels;

displaying a first indicator representing a quantity associated with the current highest bid price at a first location in the plurality of locations of the bid and ask display region, wherein the first indicator ascends or descends the static price axis as changes in the current highest bid price occur as a result of each of the plurality of price levels along the static price axis not changing positions on the graphical user interface unless a reposition command is received;

displaying a second indicator representing a quantity associated with the current lowest ask price at a second location in the plurality of locations of the bid and ask display region, wherein the second indicator ascends or descends the static price axis as changes in the current lowest ask price occur as a result of each of the plurality of price levels along the static price axis not changing positions on the

graphical user interface unless the reposition command is received;

receiving the reposition command to reposition the static price axis when a designated price is within a designated number of price levels from the lowest value or the highest value along the static price axis; and

responsive to receiving the reposition command, automatically repositioning the static price axis on the graphical user interface such that a current inside market price is displayed at a new desired location.

2. The method of claim 1, further comprising the step of establishing that the designated price is based on a last trade price for the commodity.

3. The method of claim 1, further comprising the step of establishing that the designated price is based on an inside market price for the commodity.

4. The method of claim 1, further comprising the step of establishing a second designated price and automatically repositioning the static price axis on the graphical user interface to position the second designated price at a predetermined location in relation to the static price axis, wherein the current inside market price is displayed at the new location responsive to the step of automatically repositioning the static price axis.

5. The method of claim 4, wherein the second designated price is based on a last trade price for the commodity.

6. The method of claim 4, wherein the second designated price is based on an inside market price for the commodity.

7. The method of claim 1, further comprising receiving the reposition command to reposition the static price axis when the designated price is within the designated number of price levels above the lowest value.

8. The method of claim 1, further comprising receiving the reposition command to reposition the static price axis when the designated price falls below the lowest value displayed along the static price axis.

9. The method of claim 1, further comprising receiving the reposition command to reposition the static price axis when the designated price is within the designated number of price levels below the highest value.

10. The method of claim 1, further comprising receiving the reposition command to reposition the static price axis when the designated price falls above the highest value displayed along the static price axis.

11. The method of claim 1, further comprising receiving the reposition command to reposition the static price axis when the designated price is at the lowest value.

12. The method of claim 1, further comprising receiving the reposition command to reposition the static price axis when the designated price is at the highest value.

13. The method of claim **1**, further comprising receiving a second reposition command to reposition the static price axis when a timer expires.

14. The method of claim **1**, further comprising receiving a manual command from a user input device to reposition the static price.

15. The method of claim **1**, wherein the new desired location is a location that displays the first and second indicators substantially centered between the lowest value and the highest value along the static price axis.

16. The method of claim **1**, further comprising:

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the static price axis; and

in response to a selection of a particular location of the order entry region by a single action of a user input device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.

17. A computer readable medium having computer-readable instructions thereon, which when executed by a computer, cause the computer to perform a method comprising:

receiving market information relating to a commodity from an electronic exchange via a computing device, the market information comprising an inside market with a current highest bid

price and a current lowest ask price for the commodity;

displaying a first plurality of price levels along a static price axis on a graphical user interface of an output device associated with the computing device, where the first plurality of price levels range from a lowest value to a highest value along the static price axis;

in response to an input command received via an input device associated with the computing device, adjusting the first plurality price levels among a range of price levels to an adjusted plurality of price levels;

displaying a bid and ask display region on the graphical user interface, the bid and ask display region comprising a plurality of locations corresponding to the first plurality of price levels displayed along the static price axis, wherein each location corresponds to one of the first plurality of price levels, and wherein a number of the plurality of locations changes according to adjusting the first plurality of price levels;

displaying a first indicator representing quantity associated with the current highest bid price at a first location in the plurality of locations of the bid and ask display region, wherein the first indicator ascends or descends the static price axis as changes in the current highest bid price occur as a result of each of the plurality of price levels along the static price axis not

changing positions on the graphical user interface unless a reposition command is received;

displaying a second indicator representing quantity associated with the current lowest ask price at a second location in the plurality of locations of the bid and ask display region, wherein the second indicator ascends or descends the static price axis as changes in the current lowest ask price occur as a result of each of the plurality of price levels along the static price axis not changing positions on the graphical user interface unless the reposition command is received;

receiving the reposition command to reposition the static price axis when a designated price is within a designated number of price levels from the lowest value or the highest value along the static price axis; and

responsive to receiving the reposition command, automatically repositioning the static price axis on the graphical user interface such that a current inside market price is displayed at a new desired location.

18. The computer readable medium of claim **17**, further comprising receiving a second reposition command to reposition the static price axis when a timer expires.

19. The computer readable medium of claim **17**, further comprising receiving a manual command to reposition the static price.

* * * * *

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- (12) **United States Patent Kemp, II et al.**
- (45) **Date of Patent: *Apr. 6, 2010**
- (54) **CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH**
- (75) **Inventors: Gary Allan Kemp, II, Winnetka, IL (US); Jens-Uwe Schluetter, Evanston, IL (US); Harris Brumfield, Chicago, IL (US)**
- (73) **Assignee: Trading Technologies International, Inc., Chicago, IL (US)**
- (*) **Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 499 days.**
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abandoned, which is a continuation of ap-
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(56) **References Cited**

U.S. PATENT DOCUMENTS

- 4,674,044 A 6/1987 Kalmus et al.
- 4,750,135 A 6/1988 Boilen
- 4,903,201 A 2/1990 Wagner
- 5,038,284 A 8/1991 Kramer
- 5,077,665 A 12/1991 Silverman

(Continued)

App. 328

FOREIGN PATENT DOCUMENTS

EP 1 319 211 B1 4/1998

(Continued)

OTHER PUBLICATIONS

Non-final Office Action mailed Oct. 17, 2008 for U.S.
Appl. No. 11/415,163.

(Continued)

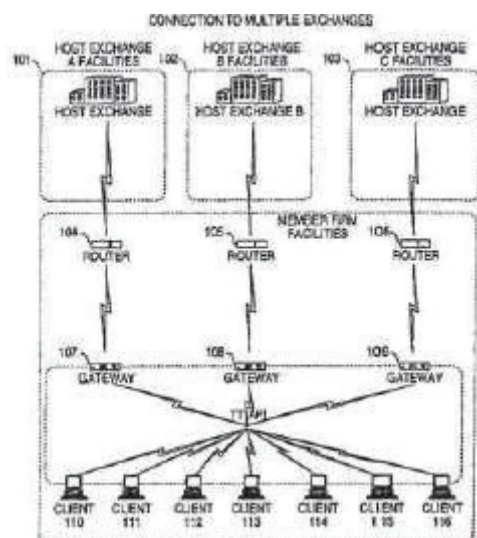
Primary Examiner—Richard C Weisberger
(74) *Attorney, Agent, or Firm*—McDonnell
Boehnen Hulbert & Berghoff LLP

(57)

ABSTRACT

A method and system for reducing the time it takes for a trader to place a trade when electronically trading on an exchange, thus increasing the likelihood that the trader will have orders filled at desirable prices and quantities. The “Mercury” display and trading method of the present invention ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently.

23 Claims, 6 Drawing Sheets



U.S. PATENT DOCUMENTS

5,101,353	A	3/1992	Lupien et al.
5,136,501	A	8/1992	Silverman et al.
5,243,331	A	9/1993	McCausland et al.
5,270,922	A	12/1993	Higgins
5,297,031	A	3/1994	Gutterman et al.
5,297,032	A	3/1994	Trojan et al.
5,689,651	A	11/1997	Lozman
5,774,877	A	6/1998	Patterson, Jr. et al.
5,793,301	A	8/1998	Patterson, Jr. et al.
5,797,002	A	8/1998	Patterson, Jr. et al.
5,845,266	A	12/1998	Lupien et al.
5,915,245	A	6/1999	Patterson, Jr. et al.
5,924,082	A	7/1999	Silverman et al.
5,924,083	A	7/1999	Silverman et al.
5,946,667	A	8/1999	Tull, Jr. et al.
5,960,411	A	9/1999	Hartman et al.
5,963,923	A	10/1999	Garber

App. 330

6,012,046	A	1/2000	Lupien et al.
6,014,643	A	1/2000	Minton
6,035,287	A	3/2000	Stallaert et al.
6,098,051	A	8/2000	Lupien et al.
6,115,698	A	9/2000	Tuck et al.
6,131,087	A	10/2000	Luke et al.
6,134,535	A	10/2000	Belzberg
6,195,647	B1	2/2001	Martyn et al.
6,272,474	B1	8/2001	Garcia
6,278,982	B1	8/2001	Korhammer et al.
6,282,521	B1	8/2001	Howorka
6,343,278	B1	1/2002	Jain et al.
6,408,282	B1	6/2002	Buist
6,421,653	B1	7/2002	May et al.
6,766,304	B2	7/2004	Kemp, II et al.
6,772,132	B1	8/2004	Kemp, II et al.
6,938,011	B1	8/2005	Kemp, II et al.
2002/0023038	A1	2/2002	Kritsch et al.
2002/0055899	A1	5/2002	Williams
2002/0138401	A1	9/2002	Allen et al.
2003/0097325	A1	5/2003	Friesen et al.
2005/0149429	A1	7/2005	Kemp, II et al.
2006/0195389	A1	8/2006	Kemp, II et al.
2007/0038554	A1	2/2007	Kemp, II et al.
2007/0038555	A1	2/2007	Kemp, II et al.
2007/0038556	A1	2/2007	Kemp, II et al.
2007/0038557	A1	2/2007	Kemp, II et al.

FOREIGN PATENT DOCUMENTS

WO	WO 91/14231	9/1991
WO	WO 95/26005	9/1995
WO	WO 98/49639	11/1998
WO	WO 99/19821	4/1999

App. 331

WO	WO 99/30259	6/1999
WO	WO 99/53424	10/1999
WO	WO 00/52619	9/2000
WO	WO 00/62187	10/2000
WO	WO 00/65510	11/2000
WO	WO 01/16830	3/2001
WO	WO 01/16852	3/2001
WO	WO 01/22315	3/2001
WO	WO 01/88808	11/2001

OTHER PUBLICATIONS

Non-final Office Action mailed Mar. 17, 2009 for U.S. Appl. No. 11/585,905.

Non-final Office Action mailed Oct. 6, 2008 for U.S. Appl. No. 11/585,907.

Final Office Action mailed Jan. 23, 2009 for U.S. Appl. No. 11/585,966.

Re-exam Certificate for U.S. Patent No. 6,766,304, issued Mar. 31, 2009.

Re-exam Certificate for U.S. Patent No. 6,772,132, issued Mar. 31, 2009.

eSpeed's Supplemental Invalidity Contentions, May 25, 2007.

eSpeed's Disclosure of Invalidity Contentions Pursuant to 35 USC 282, May 25, 2007.

Invalidity Contentions Re: TradePad Module (Letter Dated May 25, 2007).

Supplemental Invalidity Contentions Pursuant to 35 U.S.C. 282, Aug. 10, 2007.

eSpeed's and Ecco's Answers to Plaintiff's Eighth Set of Interrogatories, Aug. 4, 2006.

eSpeed and Ecco's Supplemental Answers to Plaintiff's First, Third, Seventh, Eighth, and Ninth Set of Interrogatories, May 25, 2007.

Defendant GL Trade Americas, Inc's Supplemental Responses and Objections to Interrogatory Nos. 5, 17, and 18, Jul. 24, 2006.

eSpeed's Objections and Answers to Plaintiff's Third Set of Interrogatories to Defendant eSpeed, May 12, 2005.

GL WIN Version 4.50, Mar. 3, 1999, DX 538, G 107459-G 107480, DTX 538.

Trading Pad User Manual, Aug. 10, 1999, DX 539, G 112123-G 112131, DTX 539.

Email from Wattier to M. Cartier attaching MatifVF: V4.50 manual, Mar. 30, 1998, DX 592, MC000046-MC000116, DTX 592.

User Guide V4.60 LIFFE Connect for Futures by GL Trade, 06/00/99, DX 605, G 123548-G 123603, DTX 605.

"A System and Method for Conducting Security Transactions Over a Computer Network", Mauro & Buist, Mar. 1, 1999, DX 196, eS 066150-eS 066229, DTX 196.

RCG's Presentation re WitCapital, Apr. 22, 2004, DX 208, RCG 000635-RCG 000663, DTX 208.

Mauro, Certified Patent U.S. Appl. No. 09/292,552, Apr. 15, 1999, DX 209, eS 065994-eS 066149.

Various declarations Re: U.S. Appl. No. 09/292,552, Nov. 3, 2003, DX 284, TT 099877-TT 099907, DTX 284.

Evenstreet Presentation prepared for National Discount Brokers, 00/00/1999, DX 301, CM 006787-CM 006817, DTX 301.

App. 333

WIT DSM user interface instructions, Aug. 6, 1998, DX 427, CM 006591-CM 006632, DTX 427.

Presentation re WIT DSM user interface Trade4.ppt, Oct. 12, 1998, DX 430, CM 008265-CM 008330, DTX 430.

WIT DSM Presentation re Information display and decision variables, Dec. 20, 1998, DX 431, CM 004334-CM 004347, DTX 431.

Evenstreet Presentation prepared for Flatiron Partners, 00/00/1999, DX 437, CM 007139-CM 007172, DTX 437.

WIT Capital after hours trading system, Mauro, Mar. 19, 1999, DX 440, CM 009028-CM 009059, DTX 440.

WIT Capital Corporation digital trading facility presentation, 03/00/99, DX 441, DTX 441.

WIT Capital pdf operator manual for Digital trading facility, 00/00/1999, DX 442, CM 006510-CM 006513, DTX 442.

Utility Patent Application Transmittal Re: Computer Trading System, Method and Interface, Apr. 15, 1999, Mauro, Kleia, and Buist, PX368.

SISS Functional specifications version 2.1, Feb. 16, 1988, DX 445, DTX 445.

Status review specialist support system study NYSE, Apr. 10, 1986, DX 447, DTX 447.

Declaration of W. Buist re: WIT DSM System, Apr. 26, 2006, PX 365, DTX 1777.

APT User Guide, 01/00/94, DX 152, LIFFE 000262-LIFFE 000363, DTX 152.

Release Notes—Market Trader V5.2a, Mar. 18, 1999, DX 617, G 118137-G 118152, DTX 617.

App. 334

Market Trader—Nikkel 225 & Nikkel 300 Index options and Index futures trading users guide, Mar. 20, 1998, DX 618, G100444-G100462, DTX 618.

Midas Kapiti Delivery Note and Release Note-Market Trader V5.2b, Mar. 31, 1999, DX 619, G 096511-G 096527, DTX 619.

Midas Kapiti Release Notes—Market Trader V5.2e, Apr. 12, 1999, DX 620, G 096694-G 096711, DTX 620.

Midas Kapiti Release Notes—Market Trader V5.2, DX 621, G 096712-G 096727, DTX 621, May 26, 1999.

Midas Kapiti Release Notes—Market Trader V5.2e, DX 622, G 096728-G 096754, DTX 622, Jun. 1, 1999.

Midas Kapiti Delivery Note and Release Note- Market Trader V5.2e, DX 623, G 105641-G 105667, DTX 623, May 26, 1999.

Drawing of 1997 TSE terminal by H. Kida, DX 624, DTX 624.

Directory of Software Solutions for LIFFE Connect, 02/0099, DX 156, DTX 156.

PTS trading application Version 1.1 Beta H.1, Mar. 31, 1998, DX 118, PATS 00560-PATS 00560, DTX 118.

Directory of Software Solutions for LIFFE Connect, Issue 1, 10/00/1998, DX 155, DTX 155.

Directory of Software Solutions for LIFFE Connect, Issue 3, Jun. 10, 1999, DX 157, DTX 157.

Trading Technologies Trader System User Documentation, Apr. 1, 1998, Release 3.10, DX 3, TT 015867-TT015955, DTX 3.

Aurora Chicago Board of Trade Brochure, 1990, ES0021230-ES0021241.

Ecco Consulting Study Report MEFF Software Systems, Mar. 17, 1999, ES0060578-ES0060591.

App. 335

Osaka Stock Exchange Manual (Japanese Document), Apr. 1996 REFCO0009773-REFCO0009826.
TSE Manual (Japanese Document), Nov. 15, 2005, DX179, TSE647-995, w/certified translation eS62258-62366 [TSE609-647, 694-711, 714-721, 735-736, 749-756, 759-760, 779-782, 784-810, 982-995].
TIFFE Manual (Japanese Document), Jan. 1996, REFCO0010861-REFCO0011210, (translation included as cite No. 175).
Final Detailed Design Document NYMEX Access, May 5, 1992, eS0003127-eS0003541.
The Application Program Interface (API) Reference Manual for LIFFE Connect, Release 3.0, Sep. 1998, DDX 159, DTX 159, eS00060055-eS00060145.
The Application Program Interface (API) Reference Manual for LIFFE Connect, Release 3.2, Dec. 1998, DDX 161, DTX 161, eS00060239-eS00060331.
The Application Program Interface (API) Reference Manual for LIFFE Connect, Release 3.3, Jan. 1999, DDX 162, DTX 162, eS00059959-eS00060054.
The Application Program Interface (API) Reference Manual for LIFFE Connect, Release 2.7, Sep, 1998, DDX 163, DTX 163, eS00059868-eS00059958.
OM Click Trade User's Guide for Windows NT, 10/00/1998, eS00064671-eS00064773.
GLOBEX Members Handbook, 06/00/1992, DX632, DTX632, eS006974-eS0069818.
The Complete GLOBEX2 Handbook, 05/00/1998, DX635, DTX635, CME-E0010679-0010891.
The Complete GLOBEX2 Handbook, 07/00/1998, DX637, DTX637, CME-E 014048-CME-E 014286.
MINEX Service Outline User Test/Orientation, Sep. 1992, eS0064647-eS0064670.

App. 336

ORC Instructions for Use Version 2.2.8., 0/0/1999, eS0064775-eS0032572.

Interactive Brokers, "Trade Futures Online with Interactive Brokers", May 9, 2005, eS0032571-eS0032572.

Nicholas Economides, "Electronic Call Market Trading", Journal of Portfolio Management, 2/00/1995, eS0069585-eS0069610.

TradePad.vsd Document, Feb. 9, 1999, G011169-G0111670.

Trading pad.doc Document, Jan. 26, 1999, G0111671-G0111672.

GL WIN et Logiciels complementaires (French), 10/00/99, G009121-G009486.

GL WIN et Logiciels complementaires (French), 7/00/99, G009875-G010238.

Memo re: Dual Access Version 4.5 release, Mar. 21, 1999, G0022956-G0022959.

Tradepad.txt (French), Mar. 8, 2000, G0025616-G0025618.

GL Enhancements Software Version 4.11f, Oct. 29, 1998, G0060853-G0060854,

GL Enhancements Update, Jan. 27, 1999, G0101682-G0101688.

LIFFE Connect Futures Release Note 050399.doc, Mar. 3, 1998, G0111402-G0111407.

TradingPad.doc, Apr. 30, 1999, G0112117-G0112122.

TradingPadUserManual.doc, Aug. 10, 1999, G0112123-G0112131.

LIFFE Connect Futures Functional Technical Issues to Resolve, Apr. 12, 2007, G0119049-60119050.

LIFFE Connect for Equity Options User Guide v4.30, Nov. 1998, G0119052-G0119086.

App. 337

Member Participation in the Futures Market, Apr. 12, 1999, G0119196-G0119197.
Email from Patricia Gauthier to Sam Page, Jan. 25, 1999, G0119377-G0119380.
LIFFE Connect ISV Circular No. 001.99, Jan. 8, 1999, G0119566-G0119568.
LIFFE Connect ISV Circular No. 14.99, Mar. 2, 1999, G0119583-G0119590.
LIFFE Connect ISV Circular No. 004.99, Jan. 15, 1999, G119615-G0119616.
LIFFE Connect ISV Circular No. 001.99, Jan. 15, 1999, G0119617-G0119618,
LIFFE Connect ISV Circular No. 008.98, Dec. 28, 1998, G0119631-G0119632.
LIFFE Connect for Futures Schedule for Project Deliverables, Feb. 4, 1999, G0119681-G0119682.
LIFFE Connect for Futures-Project Update #1, Meeting of Jan. 11, 1999, G0119691-G0119697.
LIFFE Connect for Futures: Project Update 2, Meeting of Feb. 10, 1999, G0119698-G0119704.
LIFFE Connect for Futures: Project Summary: Apr. 19, 1999, G0119705-G0119717.
Functional Enhancements for LIFEE Connect for Futures Project, Apr. 12, 1999, G0119718-G0119724.
Functional Enhancements for LIFEE Connect for Futures Project, Apr. 12, 1999, G0119725-G0119745.
Functional Enhancements for LIFEE Connect for Futures Project, Mar. 3, 1999.
Installation, Market Entry Test, and Technical Dress Rehearsal Summary, Feb. 23, 1999.
GL Trade Checklist-Installation Requirements for Futures, Jan. 1999, G0119795-G0119798.
Cahier de charges. doc, Feb. 9, 1999, G0111752-G0111758.

App. 338

Keyboard example, Feb. 3, 2006, G007308-G007310.
GL Cost and Services, 00/00/1998, 60108876.
GL Win Summary (French), 6/00/1998, G0091004-G0091046.
Swiss Exchange SWX—TS User Manual, Dec. 31, 1998, DTX 2215, eS0032293-eS0032547.
GLOBEX User Guide, 01/00/97, DDX 633, DTX 633, eS069819-eS070081.
QuickTrade Document and Brochure, G021027-21031.
GL Version 4.70 (French Version), Jan. 5, 2000, G0026505-26533.
GL Version 4.70 (English Version), Jan. 5, 2000, G0020593-20621.
GL WIN and Related Software Manual, Sep. 11, 2000,1)G0025251-25615.
“Introducing the Company: GL Trade” product offerings and slide presentation (to Reuters), G0026534-26559.
Thomson Financial leaflet, 09/00/2003, G0022445-22450.
Megumi Miyoshi, Japanese Patent Application No. 2001-564025, 04/18/200.
“Amazon.com Catapults Electronic Commerce to Next Level with Powerful New Features,” Amazon.com Press Release, Sep. 23, 1997, DTX1034, Dezmelyk000012-13.
Memo Re: Downloading the Terminal Program, Aug. 18, 2005.
“Specialist vs Saitori: Market-Making in New York and Tokyo”, Richard Lindsay and Ulrike Schaeede, DTX 1170, 7-8/00/1992, Silverman000494-Silveman000506.

O'Hara and Oldfield, "The Microeconomics of Market Making", *Journal of Financial and Quantitative Analysis*, 12/00/86, DTX 1169 Silverman000478-Silverman000493.

B. Weber, "Information Technology in the Major International Financial Markets", Apr. 7, 1993, DX 79. Terminal Use Manual—Windows NT Version, Tokyo International Financial Futures Exchange (TIFFE), 0/0/1994, Silverman002552-Silverman002616, DTX 1226,

USPTO Press Release, "Electronic Patent Application Records Replace Paper Files at USPTO", DTX 2285, Sep. 19, 2007.

Memorandum Opinion and Order Re: '132 and '304 Claim Construction [425], Oct. 31, 2006.

Memorandum Opinion and Order Re: TT's Motion for Clarification [475], Feb. 21, 2007.

Memorandum Opinion and Order Re: Motions for Reconsideration [875], Aug. 27, 2007.

Memorandum Opinion and Order Re: Preliminary Injunction [83], Feb. 9, 2005.

Memorandum Opinion and Order Re: eSpeed's Motion for Summary Judgment of Invalidity Denied [845], Aug. 21, 2007.

Memorandum Opinion and Order Re: TT's Motion to Preclude Prior Sale Defense Denied [873], Aug. 27, 2007.

Memorandum Opinion and Order Re: GL's Motion for Reconsideration Denied [994], Sep. 19, 2007.

Memorandum Opinion and Order Re: Priority Date [769], Jul. 12, 2007.

Memorandum Opinion and Order Re: Priority Date [1013], Sep. 25, 2007.

Memorandum Opinion and Order Re: Prior Public Use [835], Aug. 16, 2007.

Memorandum Opinion and Order Re: Defendant's Motion for Judgment as a Matter of Law on Indefiniteness [1141], Jan. 2, 2008.

Notification of Docket Entry Re: Defendants eSpeed's Motion for Judgment as a Matter of Law on Invalidity is denied [1140], Jan. 3, 2008.

Notification of Docket Entry Re: Defendant eSpeed's Motion for a New Trial is denied [1142], Jan. 3, 2008.

Memorandum Opinion and Order Re: Defendant's Motion for Judgment as a Matter of Law on Willfulness [1144], Jan. 3, 2008.

Deposition testimony of Hiroyuki Kida dated May 17, 2007 and May 18, 2007 with DDX 617-624, PDX 519-524 and PDX 531.

Trial testimony of Hiroyuki Kida dated Sep. 28, 2007 and Oct. 1, 2007 with DTX 617.

Deposition testimony of Atsushi Kawashima dated Nov. 21, 2005 with DDX 178-185.

Trial testimony of Atsushi Kawashima dated Sep. 26, 2007 with DTX 183.

Deposition testimony of Philip Carre dated Jun. 22, 2007, Sep. 6, 2007 & Sep. 13, 2007 with DDX 384-385; 473;494; 527;537-541; 592; 593A; 595-598; 605; 626; 629; 719-723; 728-732; 897-898; 896.

Deposition testimony of Michael Cartier dated May 9, 2007 with DDX 587-588; DDX 592-593A and PDX 498-500.

Deposition testimony of Cristina Dobson dated May 18, 2007 with DDX 625-635; DDX 637; PDX 533 and PDX 535.

Deposition testimony of Nicholas Garrow dated Jun. 14, 2007 with DDX 116 and DDX 592.

Trial testimony of Nicholas Garrow (via expert witness) dated Oct. 2, 2007.

Deposition testimony of Michael Glista dated February 20, 2007 with DDX 382-386.

Trial testimony of Michael Glista dated Sep. 24, 2007 and Sep. 25, 2007 with DTX 382-386; DTX 524; DTX 570; DTX 579; DTX 592; DTX 3020; DTX 3050; DTX 3057; DTX 3110; PTX 1993; PTX 2065; DTX 2092; PTX 2094.

Deposition testimony of Laurent Havard dated Apr. 24-26, 2007, May 12, 2007, Jun. 21, 2007 and Sep. 5, 2007 with DDX 506; DDX 508; DDX 517; DDX 539; DDX 551-568; DDX 570-573; DDX 575; DDX 603; PDX 462; PDX 464-483; PDX 767-769; PDX 771-774; PDX 875-877; PDX 882-888 and PDX 893.

Trial Testimony of Laurent Havard dated Sep. 21, 2007 with DTX 384; DTX 520; DTX 561-62; DTX 570; DTX 573; DTX 575; DTX 593; DTX 750-52; DTX 3011; DTX 3017-18; DTX 3050; PTX 575; PTX 2064; PTX 2074; PTX 2077; PTX 2079.

Deposition testimony of Jean Cedric Jollant dated Apr. 26, 2007 and Jun. 13, 2007 with DDX 384; DDX 517; DDX 520; DDX 551-568; DDX 575-577; PDX 465-483.

Trial testimony of Jean Cedric Jollant dated Sep. 20, 2007 with DTX 157; DTX 473; DTX 719; DTX 551-64; DTX 598; DTX 722; DTX 1903; DTX 3009-10; DTX 3014; DTX 3016-18 DTX 3020; DTX 3023; DTX 3025; PTX 166; PTX 520; PTX 526; PTX 539; PTX 573; PTX 575; PTX 579; PTX 2065.

Deposition testimony of Marc Lorin dated Sep. 5, 2007 with DDX 385; DDX 721-722; DDX 730.

Deposition testimony of Christopher Malo dated May 23, 2007 with DDX 524.

App. 342

Deposition testimony of Fred Mastro dated May 21, 2007 with DDX 638; PDX 538; PDX 540-543.

Trial testimony of Fred Mastro dated Sep. 25, 2007 with DTX 592.

Deposition testimony of William McHorris dated Apr. 10, 2007 with PDX 416-417.

Deposition testimony of Josephine Sheng dated Jun. 26, 2007 with DDX 520; DDX 522; DDX 536; DDX 575; PDX 493; PDX 683-683a; PDX 775.

Deposition testimony of Bruno Spada dated Apr. 30, 2007 and May 2, 2007 with DDX 384-385; DDX 519-21; DDX 537-38; DDX 579-580; DDX 522; DDX 538; PDX 493-495; PDX 519-522.

Trial testimony of Bruno Spada dated Sep. 24, 2007 with DTX 306; DTX 384; DTX 518-522; DTX 524; DTX 575; DTX 579-580; DTX 593; DTX 626; DTX 628; DTX 646; DTX 1899 DTX 2086; DTX 3020-3021; DTX 3058-3059; DTX 3061; DTX 3085; PTX 737; PTX 840; PTX 2083; PTX 2087; PTX 2099; PTX 2101.

Deposition testimony of Marcel Tchitchiama dated May 10-11, 2007 with DDX 156-157; DDX 168; DDX 384-85; DDX 538; DDX 592-93A; DDX 595-98; DDX 602-06; DDX 608-11 DTX 494; PDX 503; PDX 506; PDX 612.

Deposition testimony of Neil Treloar dated Jun. 19, 2007 with DDX 384; DDX 539-39A; DDX 724; DDX 726; PDX 492; PDX 750-752.

Trial testimony of Neil Treloar dated Sep. 21, 2007 and Sep. 24, 2007 with DTX 2040-2042.

Trial testimony of Gerard Varjacques dated Sep. 28, 2007 with PTX 509-510 and PTX 513.

Deposition testimony of Amy Watson dated Jun. 12, 2007 with DDX 626A; DDX 700 and PDX 636.

Deposition testimony of Barbara Wattiez dated Jun. 16, 2007 with DDX 719-723.

Trial testimony of Barbara Wattiez dated Sep. 28, 2007 with DTX 592-593A; DTX 597-598; DTX 718-719; DTX 722.

Deposition testimony of Christopher Buist dated Jun. 22, 2006 with PDX 358-364 and DDX 283-284.

Deposition testimony of Walter Buist dated Jun. 23, 2006 with DDX 315; PDX 310-315; PDX 365 and PDX 368-370.

Digital trading facility weekly operations meeting outline, DX 444, DTX 444, CM 006661-CM 006661, May 10, 1999.

Chart re DSM QA Test Plain—project plan in progress, DX 432, DTX 432, Nov. 4, 1998.

User interface design specification for WIT capital digital stock market, DX 433, DTX 433 CM 008441-CM 008478, Jan. 18, 1999.

Updated negotiations design to E. Lang from C. Mauro for review and approval prior to patent application, DX 434, CM 008410-CM 008414, DTX 434, Jan, 18, 1999.

Notes re final additions/revisions, DX 435, CM 007949-CM 007955, DTX 435, Apr. 2, 1999.

Position paper: On-line training and customer acquisition; WIT Capital DSM product launch and related schedule to E. Lang, DX 436, DTX 436, CM 006580-CM 006590, Feb. 22, 1999.

Meeting outline, DX 428, CM 00750-CM 007501, DTX 428, Sep. 11, 1998.

Presentation re WIT Capital Digital stock market Phase 1 usability and customer response testing: Preliminary report of findings, DX 429, CM 007446-CM 007466, May 1, 2006.

App. 344

WIT Capital limit order book to L. Forrest from C. Mauro, DX 425, CM 007382-CM 007411, DTX 425, Apr. 20, 1998.

User Interface Design for display options design, DX 426, CM 000249-CM 000287, DTX 426, Jul. 8, 1998.

Letter from EPO to TT Re: Five Recently Filed European Patent Oppositions, Feb. 21, 2006.

Notice of Opposition to a European Patent EP 1319211 B1, Anitra Medienprojekte GmbH, Jan. 13, 2006.

Notice of Opposition to a European Patent by Deutsche Borse AG, Jan. 12, 2006.

Notice of Opposition to a European Patent by EccoWare Ltd., Jan. 13, 2006.

Notice of Opposition to a European Patent by Rosenthal Collins Group LLC, Jan. 12, 2006.

Notice of Opposition to a European Patent by Tick-It GmbH, Jan. 13, 2006.

Declaration of Walter Buist, Exhibit 17, Apr. 26, 2007; with Faxed Signature Page.

Letter from J. Walaski to the EPO Re: Change of Address, Dec. 19, 2006.

A. Klein, WallStreet.com- Fat Cat Investing at the Click of a Mouse, Chapt. 14 "Finding Gold in Tribeca", 1998; Exhibit 16.

A. Klein, WallStreet.com- Fat Cat Investing at the Click of a Mouse, Chapt. 14-16, 18, 23, 1998; Exhibit 16 (Cont'd).

WIT Digital Stock Market, User Interface Rev. 9, Exhibit 15.

Opposition Trading Technologies, Inc. Application No. 01920183.9 EP 1319211B1, Exhibit 4 (Japanese and English Versions), 9/00/1997.

System for Buying and Selling Futures and Options Transaction Terminal Operational Guidelines, TSE Business Systems Dept., TSE647-995, eS062297-eS062380.

Letter from EPO to TT Re: Further European Patent Opposition, Feb. 23, 2006.

Letter from EPO to TT Enclosing European Patent Oppositions, Jan. 25, 2006.

Opposition TT, EP 1 319 211 B1, Copy set 1, Annex One-Grounds of Opposition, Jan. 19, 2006.

Deposition Transcript of Atsushi Kawashima, Nov. 21, 2005, Opposition EP 1 319 211 B1 Exhibit 3.

The Application Program Interface (API) Reference Manual for LIFFE Connect, 9/00/1998, release 3.1, EP 1 319 211 B1 Exhibit 7A, eS0060146-eS0060237.

Deposition Transcript of Paul MacGregor, Nov. 1, 2005, Opposition EP 1 319 211 B1 Exhibit 9A.

APT Trading Procedures (ATOM Version) of LIFFE, Apr. 3, 2001, Opposition EP 1 319 211 B1 Exhibit 9B.

APTplus Trading Procedures, Dec. 28, 1995, Opposition EP 1 319 211 B1 Exhibit 9D.

Securities Industries News, "TT Upgrades Software Platform", Aug. 28, 2000 (D6).

Letter to EPO from Karl Barnfather Enclosing Notice of Opposition (form 2300.1) and Grounds of Opposition (Annex 1), Jan. 12, 2006.

Dow Jones & Reuters Factiva, "Firms Rush to Make LIFFE Connect Decision", Dec. 4, 1998, E6.

Dow Jones & Reuters Factiva, "Date Broadcasting Partners with Alltech Investment to Provide Customers with Online Trading", Feb. 25, 1999, E8.

Japanese Document, TSE00609-627, Dec. 1, 2006 (E5), with Translation.

TT X-Trader Brochure, Dec. 1, 2006 (E7).

App. 346

Letter to J. Walanski from EPO Re: Payment, Apr, 20, 2005.

Letter to J. Walanski from EPO Re: Decision to Grant TT Patent, Mar. 3, 2005.

German Document from Tick-IT GmbH Filing New European Opposition, Jan. 14, 2006.

Faxed German Document from Tick-IT GmbH Filing New European Opposition, Jan. 13, 2006.

Memo Re: Futures/Options Trading System and Japanese Patent Application No. 2001-564025 (Japanese), Aug. 18, 2005.

Patsystems News Rel. Nov. 6, 2001.

GL Trade, CAC and Stoxx Futures on MATIF NSC VF, User Information Notes, pp. 1-14, published by GL Trade, London, England, Mar. 15, 1999.

GL Trade, LIFFE Connect for Futures, User Guide, V4.50 Beta, pp. 1-24, published by GL Trade, London, England, Jan. 1999.

GL Trade, LIFFE Connect for Futures, User Guide, V4.50, pp. 1-39, published by GL Trade, London, England, Feb. 1999.

GL Trade, LIFFE Connect for Futures, User Guide, V4.50, pp. 1-39, published by GL Trade, London, England, Mar. 1999.

GL Trade, LIFFE Connect for Futures, User Guide, V4.51, pp. 1-57, published by GL Trade, London, England, Jun. 1999.

www.tradingtechnologies.com/products/xtrade_full.html (viewed May 22, 2001).

Kharouf, "A trading room with a view," *Fututes*, 27, 11, Nov. 1998.

USPTO Presentation, NASDAQ, Nov. 8, 2001, enclosed pp. 1-13.

Tokyo Stock Exchange, Publication 1, “Next-Generation Futures Options Trading System” (participants seminar materials), Sep. 1997.

English Translation of Tokyo Stock Exchange, Publication 1, “Next-Generation Futures Options Trading System” (participants seminar materials), Sep. 1997.

REFCO English Translation of Tokyo Stock Exchange, Publication 1, “Next-Generation Futures Options Trading System” (participants seminar materials), Sep, 1997.

Tokyo Stock Exchange, Publication 2, “Futures/Options Trading System Guidelines for Operating the Trading Terminals”, Aug. 1998.

English Translation of Tokyo Stock Exchange, Publication 2, “Futures/Options Trading System Guidelines for Operating the Trading Terminals”, Aug. 1998.

REFCO English Translation of Tokyo Stock Exchange, Publication 2, “Futures/Options Trading System Guidelines for Operating the Trading Terminals”, Aug. 1998.

Tokyo Stock Exchange, Document 1, “Downloading the Terminal Program and Sending the Replacement for the Guidelines for Operating the Trading Terminals”, Jan. 2000.

English Translation of Tokyo Stock Exchange, Document 1, “Downloading the Terminal Program and Sending the Replacement for the Guidelines for Operating the Trading Terminals”, Jan. 2000.

Tokyo Stock Exchange, Publication 3, “Tokyo Stock Exchange 50th Anniversary Book of Materials”, Jul. 31, 2000.

English Translation of Tokyo Stock Exchange, Publication 3, "Tokyo Stock Exchange 50th Anniversary Book of Materials", Jul. 31, 2000.

REFCO English Translation Tokyo Stock Exchange, Publication 3, "Tokyo Stock Exchange 50th Anniversary Book of Materials", Jul. 31, 2000.

English Translation of Tokyo Stock Exchange Offer Form, Apr. 18, 2005.

Information Offer Form, Apr. 18, 2005.

Notification of Information Offer Form, Jun. 3, 2005.

"APT: A trading system for the future," The London International Financial Futures Exchange (LIFFE), 1990, 11 pages.

Trading Screen, INTEX of Bermuda, 1984, one page.

B.W. Weber, "Information Technology in the Major International Financial Markets," Stern School of Business, New York University, Apr. 7, 1993, pp. 1-43.

Trading Screen, TIFFE Exchange, circa 1989-1990, one page.

Trading Screen, MEFF Exchange, 1990, one page.

C. Cavaletti, "Order Routing," Futures Magazine, Feb. 1997, pp. 68-70.

"AURORA: The most technologically advanced trading system available today," Chicago Board of Trade, 1989, 11 pages.

"One Click Trading Options," Trading Technologies, Inc., 1998, one page.

Trading Screen, SWX Exchange, 1990, two pages,

"Expanding futures and options trading around the world, around the clock," GLOBEX, 1989, 48 pages.

S. Hansell, "The computer that ate Chicago," Institutional Investor, Feb. 1989, 5 pages.

“Sydney Futures Exchange Announces Plans to Join GLOBEX,” GLOBEX Report: An Update on the CME global electronic exchange, vol. II, No. 2, Feb. 10, 1989, 4 pages.

New York Mercantile Exchange (NYMEX) Access Documents, Feb. 28, 1992, 413 pages.

The Computer Assisted Trading System (CATS) Traders’ Manual, Toronto Stock Exchange, Sep. 30, 1977, 142 pages.

Market Watch trading screen, date not available, 1 page.

Grummer et al., “Preliminary Feasibility Study,” Bermudex Ltd., Nov. 1980, 100 pages.

Peake et al., Appendix C of Preliminary Feasibility Study, “The ABCs of trading on a national market system,” Bermudex Ltd., Sep. 1997, 16 pages.

J.W. Peake, Appendix E of Preliminary Feasibility Study, “The last fifteen meters,” Bermudex Ltd., Jun. 15, 1997, 18 pages.

Declaration of Brendan Bradley in Case No. 04 C 5312, Nov. 18, 2004, 27 pages.

Memorandum Opinion and Order of Judge James B. Moran in Case No. 04 C 5312, Feb. 9, 2005, 22 pages. Court’s ruling on no prior sale.

Memorandum Opinion and Order Re: No prior use.

Memorandum Opinion and Order Re: Inequitable Conduct.

Memorandum Opinion and Order Re: Court Reaffirming Priority.

Evenstreet Presentation prepared for Flatiron Partners, 00/00/1999, DX 437, CM 007139-CM 007172, DTX 437.

App. 350

WIT Capital digital trading facility presentation to Goldman Sachs, DX 438, CM 004523-CM 004547, DTX 438.

WIT Capital Digital trading facility presentation to PaineWebber, Inc., DX 439, DTX 439.

WIT Capital after hours trading system, Mauro, Mar. 19, 1999, DX 440, CM 009028-CM 009059, DTX 440.

WIT Capital Corporation digital trading facility presentation, 03/00/99, DX 441, DTX 441.

WIT Capital pdf operator manual for Digital trading facility, 00/00/1999, DX 442, CM 006510-CM 006513, DTX 442.

Overview re Digital trading facility, DX 443, CM 006315-CM 006344, DTX 443.

Utility Patent Application Transmittal Re: Computer Trading System, Method and Interface, Apr. 15, 1999, Mauro, Kleia, and Buist, PX368.

Photocopy of Disks containing exhibits A and B to declaration of W. Buist, PX366.

SISS Functional specifications version 2.1, Feb. 16, 1988, DX 445, DTX 445.

Overview re SPATS; the Electronic Broker, DX 446, DTX 446.

Status review specialist support system study NYSE, Apr. 10, 1986, DX 447, DTX 447.

Declaration of W. Buist re: WIT DSM System, Apr. 26, 2006, PX 365, DTX 1777.

Sample screens of APT system, DX 150, DTX 150.

Photo of trader w/ APT screen, DX 151, LIFFE 00167-LIFFE 00168, DTX 151.

APT User Guide, 01/00/94, DX 152, LIFFE 000262-LIFFE 000363, DTX 152.

LIFFE guide/pamphlet, DX 148, DTX 148.

App. 351

Release Notes - Market Trader V5.2a, Mar. 18, 1999, DX 617, G 118137-G 118152, DTX 617.

Market Trader - Nikkel 225 & Nikkel 300 Index options and Index futures trading users guide, Mar. 20, 1998, DX 618, 0100444-0100462, DTX 618.

Midas Kapiti Delivery Note and Release Note- Market Trader V5.2b, Mar. 31, 1999, DX 619, 0 096511-G 096527, DTX 619.

Midas Kapiti Release Notes - Market Trader V5.2e, Apr. 12, 1999, DX 620, G 096694- G 096711, DTX 620.

Midas Kapiti Release Notes - Market Trader V5.2, DX 621, G 096712 -G 096727, DTX 621, May 26, 1999.

Midas Kapiti Release Notes - Market Trader V5.2e, DX 622, G 096728- G 096754, DTX 622, Jun. 1, 1999.

Midas Kapiti Delivery Note and Release Note- Market Trader V5.2e, DX 623, G 105641-G 105667, DTX 623, May 26, 1999.

Drawing of 1997 TSE terminal by H. Kida, DX 624, DTX 624.

Directory of Software Solutions for LIFFE Connect, 02/0099, DX 156, DTX 156.

ScreenShots: Patsystem "Canned" Demo, 02/00/97, DX 120, PATS 00545-PATS 00559, DTX 120.

PTS Client Version 2.1 F, DX 119, PATS 00067-PatATS 00082, DTX 119.

PTS trading application Version 1.1 Beta H.1. Mar. 31, 1998, DX 118, PATS 00560 -PATS 00560, DTX 118.

Nicholas Economides, "Electronic Call Market Trading", Journal of Portfolio Management, 2/00/1995, eS0069585-eS0069610.

GL Trading Pad Manual, G0020819-00020826.

TradePad Instructions (French), G0025748-G0025749.

App. 352

TradePad.vsd Document, Feb. 9, 1999, G011169-G0111670.
Trading pad.doc Document, Jan. 26, 1999, G0111671-G0111672.
GL Win et Logiciels complementaires (French), 10//00/99, G009121-0009486.
GL Win et Logiciels complementaires (French), 7/00/99, 0009875-G010238.
Memo re: Dual Access Version 4.5 release, Mar. 21, 1999, 00022956-00022959:.
tradepad.txt (French), Mar. 8, 2000, G0025616-00025618.
GL Enhancements Software Version 4.11 f, Oct. 29, 1998, G0060853-G0060854.
GL Enhancements Update, Jan, 27, 1999, G0101682-00101688.
LIFFE Connect Futures Release Note 050399.doc, Mar. 3, 1998, G0111402-G0111407.
TradingPad.doc, Apr. 30, 1999, G0112117-G0112122.
TradingPadUserManual.doc. Aug. 10, 1999, G0112123-G0112131.
GL Win Version 4.51, G0118856-00118865.
GL Trade Presentation (French), Apr. 25, 1999, G0118989-G0119044.
LIFFE Connect Futures Functional Technical Issues to Resolve, Apr. 12, 2007, G0119049-00119050.
LIFFE Connect for Equity Options User Guide v4.30, Nov. 1998, 00119052-00119086.
Member Participation in the Futures Market, Apr. 12, 1999, 00119196-G0119197.
Email from Patricia Gauthier to Sam p., Jan. 25, 1999, G0119377-G0119380.
LIFFE Connect ISV Circular No: 001.99, Jan. 8, 1999, 00119566-00119568.

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LIFFE Connect ISV Circular No: 14.99, Mar, 2, 1999, G0119583-00119590.
LIFFE Connect ISV Circular No: 004.99, Jan. 15, 1999, 0119615-G0119616.
LIFFE Connect ISV Circular No: 001.99, Jan. 15, 1999, 00119617-00119618.
LIFFE Connect ISV Circular No: 008.98, Dec. 28, 1998, G0119631-00119632.
Screenshot of GL TradePad, G0119660.
LIFFE Connect for Futures Schedule for Project Deliverables, Feb. 4, 1999, G0119681-G0119682.
LIFFE Connect for Futures-Project Update #1, Meeting of Jan. 11, 999, 00119691-00119697.
LIFFE Connect for Futures: Project Update 2, Meeting of Feb.10, 1999, G0119698-G0119704.
LIFFE Connect for Futures: Project Summary: Apr. 19, 1999, G0119705-G0119717.
Functional Enhancements for LIFEE Connect for Futures Project, Apr. 12, 1999, 00119718-00119724.
Functional Enhancements for LIFEE Connect for Futures Project, Apr. 12, 1999, G0119725-G0119745.
Functional Enhancements for LIFEE Connect for Futures Project, Mar. 3, 1999.
Installation, Market Entry Test, and Technical Dress Rehearsal Summary, Feb. 23, 1999.
GL Trade Checklist-Installation Requirements for Futures, Jan. 1999, G0119795-G0119798.
Cahier de charges.doc, Feb. 9, 1999, G0111752-G0111758.
Keyboard example, Feb. 3, 2006, G007308-0007310.
GL Brochure, G0021652-21658.
GL Cost and Services, 00/00/1998, G0108876.
GL Win Summary (French), 6/00/1998, G0091004-00091046.

App. 354

Swiss Exchange SWX—TS User Manual, Dec. 31, 1998, DTX 2215, e50032293-e50032547.
Screen No. 100-Order Book & Order Entry 1 (Single View), 6060637-6060639.
Globex User Guide, 01/00/97, DDX 633, DTX 633, eS069819-6070081.
QuickTrade Document and Brochure, M21027-21031.
LIFFE Connect for Futures User Guide v4.5, 6/00/1999, 00025751-25806.
GL Version 4.70 (French Version), Jan. 5, 2000, 00026505-26533.
GL Version 4.70 (English Version), Jan. 5, 2000, 00020593-20621.
GL Win and Related Software Manual, Sep. 11, 2000, 1) G0025251-25615.
GL Win and Related Software Manual. 2) 00025942-26267.
GL Win and Related Software Manual. 3) G010239-10610.
GL Win et Logiciels complementaires (French), G0009495-9874.
Internal Product News doc on QuickTrade, G0020468-20471.
“Introducing the Company: G1 Trade” product offerings and slide presentation (to Reuters), G0026534-26559.
GL Product Leaflet Re: Mosaic, 00022529-22530.
Thomson Financial leaflet, 09/00/2003, G0022445-22450.
LIFFE Connect for Futures leaflet, G0023885-23888.
TSE Japanese Document, pp. 4-15.
TSE Japanese Document, pp. 6-15.
Megumi Miyoshi, Japanese Patent Application No. 2001-564025, 4/18/200.

“Amazon.com Catapults Electronic Commerce to Next Level with Powerful New Features,” Amazon.com Press Release, Sep. 23, 1997, DTX 1034, Dezmelyk000012-13.

Apple Advertisement, Scientific American, Sep. 1984, Scientific American Inc. NY, NY Dezmelyk000014-33.

Memo Re: Downloading the Terminal Program, Aug. 18, 2005.

“Specialist vs Saitori: Market-Making in New York and Tokyo”, Richard Lindsay and Ulrike Schaede, DTX 1170, 7-8/00/1992, Silverman000494-Silverman000506.

“Building for Excellence”, MINEX Brochure, DTX 1153, Silverman000330-Silverman000334.

Chicago Mercantile Exchange (CME) Brochure, DTX1163, Silverman000406-Silverman000407.

Meff Renta Fija Manual, DTX 1165, 10/00/1997, Silverman000410-Silverman000473.

O’Hara and Oldfield, “The Microeconomics of Market Making”, Journal of Financial and Quantitative Analysis, 12/00/86, DTX 1169 Silverman000478-Silverman000493.

B. Weber, “Information Technology in the Major International Financial Markets”, Apr. 7, 1993, DX 79.

Terminal Use Manual - Windows NT Version, Tokyo International Financial Futures Exchange (TIFFE), 0/0/1994, Silverman002552-Silverman002616, DTX 1226.

USPTO Press Release, “Electronic Patent Application Records Replace Paper Files at USPTO”, DTX 2285, Sep. 19, 2007.

Memorandum Opinion and Order Re: ‘132 and ‘304 Claim Construction [425], Oct. 31, 2006.

Memorandum Opinion and Order Re: TT's Motion for Clarification [475], Feb. 21, 2007.

Memorandum Opinion and Order Re: Non-Infringement [708], Jun. 20, 2007.

Memorandum Opinion and Order Re: Motions for Reconsideration [875], Aug. 27, 2007.

Memorandum Opinion and Order Re: "Single Action" Ruling [963], Sep. 12, 2007.

Memorandum Opinion and Order Re: Preliminary Injunction [83], Feb. 9, 2005.

APT Trading Procedures (ATOM Version) of LIFFE, Apr. 3, 2001, Opposition EP 1 319 211 B1 Exhibit 9B.

APTplus Trading Procedures, Dec. 28, 1995, Opposition EP 1 319 211 B1 Exhibit 9D.

IRIS Investment Support Systems Window Ad, Opposition EP 1 319 211 B1 Exhibit 10.

Fig. 2 Substitute Sheet (Rule 26), Opposition EP 1 319 211 B1 Exhibit 13A.

U.S. Appl. No. 60/186,322, Opposition EP 1 319 211 131 Exhibit 13B.

LIFFE's New Electronic Trading Platform for Futures, LIFFE 202-261, Opposition EP 1 319 211 B1 Exhibit 8D.

TIFFE Internet Article, "New On-Screen Trading Terminals", E2.

System for Buying and Selling Futures and Options Transaction Terminal Operational Guidelines, Tse Business Systems Dept, TSE00647-810, e50622977-e5062366, D1(2)✓.

ORC Instructions for Use, Version 2.2.8., 1999.

Futures/Options Trading System Guidelines for Operating the Trading Terminals, TSE Business Systems Dept, TSE00628-643, eS062278-eS062293, D1(3).

App. 357

Securities Industries News, "TT Upgrades Software Platform", Aug. 28, 2000 (D6).

Letter to EPO from Karl Barnfather Enclosing Notice of Opposition (form 2300.1) and Grounds of Opposition (Annex 1), Jan. 12, 2006.

Dow Jones & Reuters Factiva, "Firms Rush to Make LIFFE Connect Decision", Dec. 4, 1998, E6.

Dow Jones & Reuters Factiva, "Date Broadcasting Partners with Alltech Investment to Provide Customers with Online Trading", Feb. 25, 1999, E8.

Trading Pad Document (E3).

Japanese Document. TSE00609-627, Dec. 1, 2006 (E5), with Translation.

TT X-Trader Brochure, Dec. 1, 2006 (E7).

Letter to J. Walanski from EPO Re: Payment, Apr. 20, 2005.

Letter to J. Walanski from EPO Re: Decision to Grant TT Patent, Mar. 3, 2005.

German Document from Tick-IT GmbH Filing New European Opposition, Jan. 14, 2006.

Annex A to TT's Reply Brief.

Annex B to TT's Reply Brief,

Memo Re: Futures/Options Trading System and Japanese Patent Application No. 2001-564025 (Japanese), Aug. 18, 2005.

FIG. 1

CONNECTION TO MULTIPLE EXCHANGES

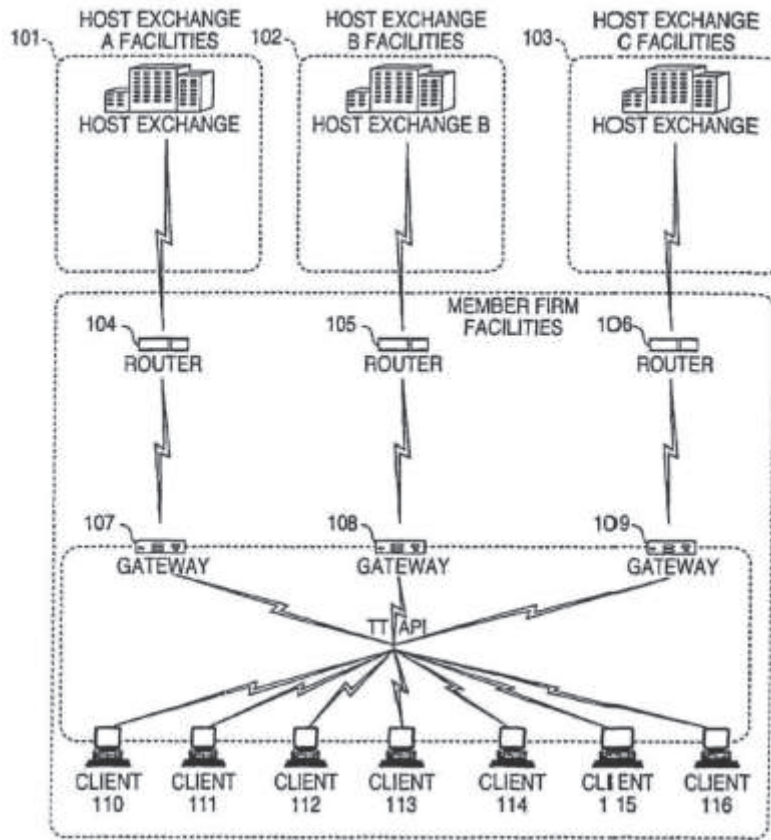


FIG. 2

	201	202	203	204	205	
	Depth	BidQty	BidPrc	AskPrc	AskQty	Total
1	•	785	7626	7627	21	8230
2		626	7625	7629	815	
3		500	7624	7630	600	
4		500	7623	7631	2456	
5		200	7622	7632	800	

FIG. 3

SYCOM FGBL DEC99					
E/W	10:48:44	BidQ	AskQ	Prc	LTQ
1009	L 3		104	99	
1010	R 5		24	98	
1011	720		33	97	
1012	X 10		115	96	
1013	0		32	95	
1014	10 1H		27	94	
	50 3H		63	93	
1007	S 0 W 24	1K 5H	45	92	
	S 0 W 7	CLR	28	91	
1015	X 10		20	90	10
1016	17		18	89	
1008	B 0 W 15	CXL	97	88	
	B 0 W 13	+ -	30	87	
1017		NET 0	43	86	
1018	B 0 W 17	NET REAL	110	85	
1019			23	84	
			31	83	
1021			125	82	
			21	81	

FIG. 4

SYCOM FGBL DEC99						[-][X]	
E/W	10:48:44		BidQ	AskQ	Prc	LTQ	
	L	3		104	99		
	R	5		24	98		
	720			33	97		
	×	10		115	96		
	0			32	95		
	10	1H		27	94		
	50	3H					
S 10 W 14	1K	5H		63	93	10	}1101
	CLR		43		92		
	×	10	125		91		
	17	▽	97		90		
B 0 W 15	CXL		18		89		
B 0 W 13	+	-	97		88		
	NET 0		30		87		
B 0 W 17	NET REAL		43		86		
			110		85		
			23		84		
			31		83		
			125		82		
			21		81		

FIG. 5

SYCOM FGBL DEC99						[- □ ×]	
E/W	10:48:44		BidQ	AskQ	Prc	LTQ	
	L	3		104	99		
	R	5		24	98		
	720			33	97		
	×	10		115	96		
	0			32	95		
	10	1H		27	94		
	50	3H		63	93		
S 0 W 24	1K	5H		45	92		
S 0 W 7	CLR			28	91		
	×	10		20	90	10	
	17	▼		18	89		
B 0 W 15	CXL		18		88		
B 0 W 13	+	-	97		87		
	NET 0		30		86		
			43		85		
B 0 W 17	NET REAL		110		84		
			23		83		
			31		82		
			125		81		
			21				

1206

1205

1204

1208

1201

1202

1203

1207

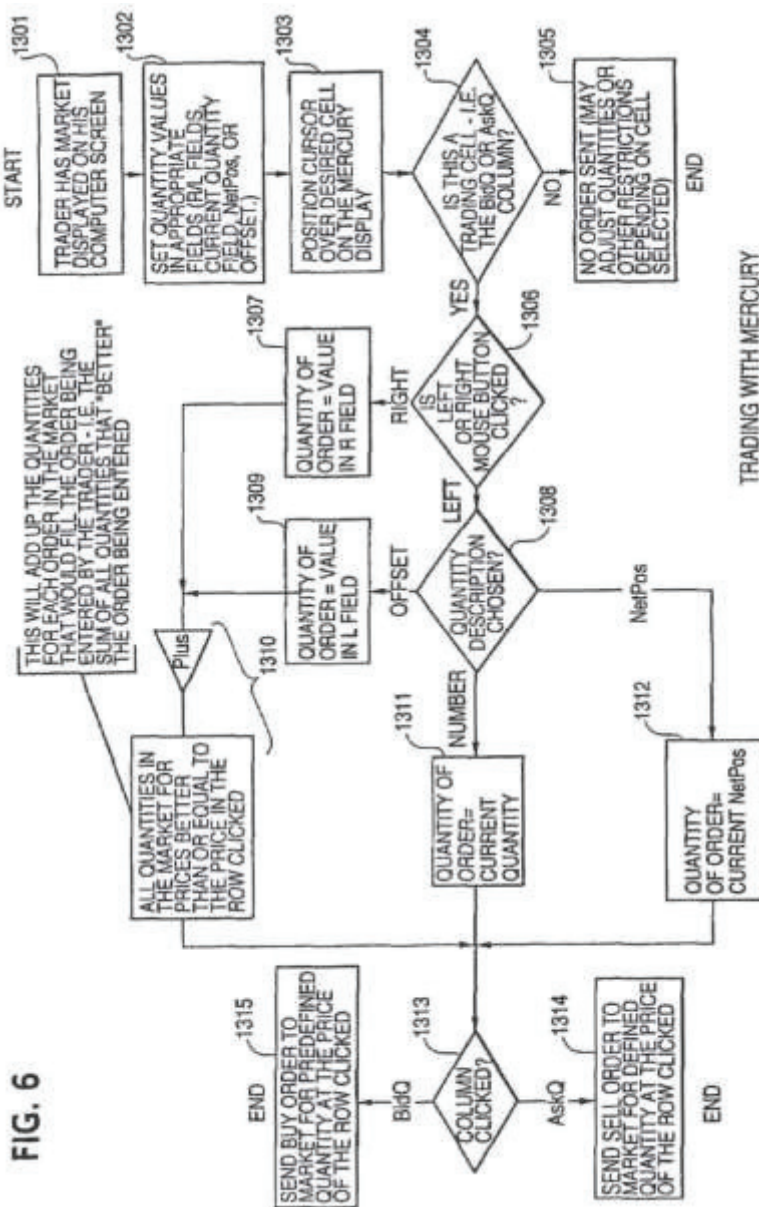


FIG. 6

**CLICK BASED TRADING WITH INTUITIVE
GRID DISPLAY OF MARKET DEPTH**

PRIORITY

The present application is a continuation of Ser. No. 11/415,163, filed May 2, 2006, which is a continuation of Ser. No. 10/237,131, filed Sep, 9, 2002, which is a continuation of Ser. No. 09/590,692, filed Jun. 9, 2000, which is now U.S. Pat. No. 6,772,132, issued Aug, 3, 2004, which claims priority to a U.S. provisional application 60/186,322, filed Mar. 2, 2000, the contents of which are incorporated herein by reference.

FIELD OF INVENTION

The present invention is directed to the electronic trading of commodities. Specifically, the invention provides a trader with a versatile and efficient tool for executing trades. It facilitates the display of and the rapid placement of trade orders within the market trading depth of a commodity, where a commodity includes anything that can be traded with quantities and/or prices.

BACKGROUND OF THE INVENTION

At least 60 exchanges throughout the world utilize electronic trading in varying degrees to trade stocks, bonds, futures, options and other products. These electronic exchanges are based on three components: mainframe computers (host), communications servers, and the exchange participants' computers (client). The host forms the electronic heart of the fully computerized electronic trading system, The system's operations cover order-matching, maintaining order

books and positions, price information, and managing and updating the database for the online trading day as well as nightly batch runs. The host is also equipped with external interfaces that maintain uninterrupted online contact to quote vendors and other price information systems.

Traders can link to the host through three types of structures: high speed data lines, high speed communications servers and the Internet. High speed data lines establish direct connections between the client and the host. Another connection can be established by configuring high speed networks or communications servers at strategic access points worldwide in locations where traders physically are located. Data is transmitted in both directions between traders and exchanges via dedicated high speed communication lines. Most exchange participants install two lines between the exchange and the client site or between the communication server and the client site as a safety measure against potential failures. An exchange's internal computer system is also often installed with backups as a redundant measure to secure system availability. The third connection utilizes the Internet. Here, the exchange and the traders communicate back and forth through high speed data lines, which are connected to the Internet. This allows traders to be located anywhere they can establish a connection to the Internet.

Irrespective of the way in which a connection is established, the exchange participants' computers allow traders to participate in the market. They use software that creates specialized interactive trading screens on the traders' desktops. The trading screens

enable traders to enter and execute orders, obtain market quotes, and monitor positions. The range and quality of features available to traders on their screens varies according to the specific software application being run. The installation of open interfaces in the development of an exchange's electronic strategy means users can choose, depending on their trading style and internal requirements, the means by which they will access the exchange.

The world's stock, bond, futures and options exchanges have volatile products with prices that move rapidly. To profit in these markets, traders must be able to react quickly. A skilled trader with the quickest software, the fastest communications, and the most sophisticated analytics can significantly improve his own or his firm's bottom line. The slightest speed advantage can generate significant returns in a fast moving market. In today's securities markets, a trader lacking a technologically advanced interface is at a severe competitive disadvantage.

Irrespective of what interface a trader uses to enter orders in the market, each market supplies and requires the same information to and from every trader. The bids and asks in the market make up the market data and everyone logged on to trade can receive this information if the exchange provides it. Similarly, every exchange requires that certain information be included in each order. For example, traders must supply information like the name of the commodity, quantity, restrictions, price and multiple other variables. Without all of this information, the market will not accept the order. This input and output of information is the same for every trader.

With these variables being constant, a competitive speed advantage must come from other aspects of the trading cycle. When analyzing the time it takes to place a trade order for a given commodity, various steps contribute in different amounts to the total time required. Approximately 8% of the total time it takes to enter an order elapses between the moment the host generates the price for the commodity and the moment the client receives the price. The time it takes for the client application to display the price to the trader amounts to approximately 4%. The time it takes for a trade order to be transmitted to the host amounts to approximately 8%. The remainder of the total time it takes to place an order, approximately 80%, is attributable to the time required for the trader to read the prices displayed and to enter a trade order. The present invention provides a significant advantage during the slowest portion of the trading cycle—while the trader manually enters his order. Traders recognize that the value of time savings in this portion may amount to millions of dollars annually.

In existing systems, multiple elements of an order must be entered prior to an order being sent to market, which is time consuming for the trader. Such elements include the commodity symbol, the desired price, the quantity and whether a buy or a sell order is desired. The more time a trader takes entering an order, the more likely the price on which he wanted to bid or offer will change or not be available in the market. The market is fluid as many traders are sending orders to the market simultaneously. In fact, successful markets strive to have such a high volume of trading that any trader who wishes to enter an order will

find a match and have the order filled quickly, if not immediately. In such liquid markets, the prices of the commodities fluctuate rapidly. On a trading screen, this results in rapid changes in the price and quantity fields within the market grid. If a trader intends to enter an order at a particular price, but misses the price because the market prices moved before he could enter the order, he may lose hundreds, thousands, even millions of dollars. The faster a trader can trade, the less likely it will be that he will miss his price and the more likely he will make money.

SUMMARY OF THE INVENTION

The inventors have developed the present invention which overcomes the drawbacks of the existing trading systems and dramatically reduces the time it takes for a trader to place a trade when electronically trading on an exchange. This, in turn, increases the likelihood that the trader will have orders filled at desirable prices and quantities.

The “Mercury” display and trading method of the present invention ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently.

Specifically, the present invention is directed to a graphical user interface for displaying the market depth of a commodity traded in a market, including a dynamic display for a plurality of bids and for a plurality of asks in the market for the commodity and a static display of prices corresponding to the plurality

of bids and asks. In this embodiment the pluralities of bids and asks are dynamically displayed in alignment with the prices corresponding thereto. Also described herein is a method and system for placing trade orders using such displays.

These embodiments, and others described in greater detail herein, provide the trader with improved efficiency and versatility in placing, and thus executing, trade orders for commodities in an electronic exchange. Other features and advantages of the present invention will become apparent to those skilled in the art from the following detailed description. It should be understood, however, that the detailed description and specific examples, while indicating preferred embodiments of the present invention, are given by way of illustration and not limitation. Many changes and modifications within the scope of the present invention may be made without departing from the spirit thereof, and the invention includes all such modifications.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates the network connections between multiple exchanges and client sites;

FIG. 2 illustrates screen display showing the inside market and the market depth of a given commodity being traded;

FIG. 3 illustrates the Mercury display of the present invention;

FIG. 4 illustrates the Mercury display at a later time showing the movement of values when compared to FIG. 3;

FIG. 5 illustrates a Mercury display with parameters set in order to exemplify the Mercury trading method; and

FIG. 6 is a flowchart illustrating the process for Mercury display and trading,

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As described with reference to the accompanying figures, the present invention provides a display and trading method to ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to place trade orders quickly and efficiently. A commodity's market depth is the current bid and ask prices and quantities in the market. The display and trading method of the invention increase the likelihood that the trader will be able to execute orders at desirable prices and quantities.

In the preferred embodiment, the present invention is implemented on a computer or electronic terminal. The computer is able to communicate either directly or indirectly (using intermediate devices) with the exchange to receive and transmit market, commodity, and trading order information. It is able to interact with the trader and to generate contents and characteristics of a trade order to be sent to the exchange. It is envisioned that the system of the present invention can be implemented on any existing or future terminal or device with the processing capability to perform the functions described herein. The scope

of the present invention is not limited by the type of terminal or device used. Further, the specification refers to a single click of a mouse as a means for user input and interaction with the terminal display as an example of a single action of the user. While thus describes a preferred mode of interaction, the scope of the present invention is not limited to the use of a mouse as the input device or to the click of a mouse button as the user's single action. Rather, any action by a user within a short period of time, whether comprising one or more clicks of a mouse button or other input device, is considered a single action of the user for the purposes of the present invention.

The system can be configured to allow for trading in a single or in multiple exchanges simultaneously. Connection of the system of the present invention with multiple exchanges is illustrated in FIG. 1. This figure shows multiple host exchanges **101-103** connected through routers **104-106** to gateways **107-109**. Multiple client terminals **110-116** for use as trading stations can then trade in the multiple exchanges through their connection to the gateways **107-109**. When the system is configured to receive data from multiple exchanges, then the preferred implementation is to translate the data from various exchanges into a simple format. This "translation" function is described below with reference to FIG. 1. An applications program interface ("TT API" as depicted in the figure) translates the incoming data formats from the different exchanges to a simple preferred data format. This translation function may be disposed anywhere in the network, for example, at the gateway server, at the individual workstations or at both. In addition, the storage at gateway servers and at the

client workstations, and/or other external storage cache historical data such as order books which list the client's active orders in the market; that is, those orders that have neither been filled nor cancelled. Information from different exchanges can be displayed at one or in multiple windows at the client workstation. Accordingly, while reference is made through the remainder of the specification to a single exchange to which a trading terminal is connected, the scope of the invention includes the ability to trade, in accordance with the trading methods described herein, in multiple exchanges using a single trading terminal.

The preferred embodiments of the present invention include the display of "Market Depth" and allow traders to view the market depth of a commodity and to execute trades within the market depth with a single click of a computer mouse button. Market Depth represents the order book with the current bid and ask prices and quantities in the market. In other words, Market Depth is each bid and ask that was entered into the market, subject to the limits noted below, in addition to the inside market. For a commodity being traded, the "inside market" is the highest bid price and the lowest ask price.

The exchange sends the price, order and fill information to each trader on the exchange. The present invention processes this information and maps it through simple algorithms and mapping tables to positions in a theoretical grid program or any other comparable mapping technique for mapping data to a screen. The physical mapping of such information to a screen grid can be done by any technique known to those skilled in the art. The present invention is not

limited by the method used to map the data to the screen display.

How far into the market depth the present invention can display depends on how much of the market depth the exchange provides. Some exchanges supply an infinite market depth, while others provide no market depth or only a few orders away from the inside market. The user of the present invention can also chose how far into the market depth to display on his screen.

FIG. 2 illustrates a screen display of an invention described in a commonly owned co-pending application entitled “Click Based Trading with Market Depth Display” Ser. No. 11/061, 554, filed on Feb. 18, 2005, the contents of which are incorporated herein by reference. This display shows the inside market and the market depth of a given commodity being traded. Row 1 represents the “inside market” for the commodity being traded which is the best (highest) bid price and quantity and the best (lowest) ask price and quantity. Rows 2-5 represent the “market depth” for the commodity being traded. In the preferred embodiment of the present invention, the display of market depth (rows 2-5) lists the available next-best bids, in column 203, and asks, in column 204. The working bid and ask quantity for each price level is also displayed in columns 202 and 205 respectively (inside market—row 1). Prices and quantities for the inside market and market depth update dynamically on a real time basis as such information is relayed from the market.

In the screen display shown in FIG, 2, the commodity (contract) being traded is represented in row 1 by the character string “CDH0”. The Depth column

208 will inform the trader of a status by displaying different colors. Yellow indicates that the program application is waiting for data. Red indicates that the Market Depth has failed to receive the data from the server and has “timed out.” Green indicates that the data has just been updated. The other column headings in this and all of the other figures, are defined as follows. BidQty (Bid Quantity): the quantity for each working bid. BidPrc (Bid Price): the price for each working bid, AskPrc (Ask Price): the price for each working ask, AskQty (Ask Quantity): the quantity for each working ask, LastPrc (Last Price): the price for the last bid and ask that were matched in the market and LastQty (Last Quantity): the quantity traded at the last price. Total represents the total quantity traded of the given commodity.

The configuration of the screen display itself informs the user in a more convenient and efficient manner than existing systems. Traders gain a significant advantage by seeing the market depth because they can see trends in the orders in the market. The market depth display shows the trader the interest the market has in a given commodity at different price levels. If a large amount of bids or asks are in the market near the trader’s position, he may feel he should sell or buy before the inside market reaches the morass of orders. A lack of orders above or below the inside market might prompt a trader to enter orders near the inside market. Without seeing the market depth, no such strategies could be utilized. Having the dynamic market depth, including the bid and ask quantities and prices of a traded commodity aligned with and displayed below the current inside market of the commodity conveys the information to the user

in a more intuitive and easily understandable manner. Trends in the trading of the commodity and other relevant characteristics are more easily identifiable by the user through the use of the present invention.

Various abbreviations are used in the screen displays, and specifically, in the column headings of the screen displays reproduced herein. Some abbreviations have been discussed above. A list of common abbreviations and their meanings is provided in Table 1.

TABLE I

<u>Abbreviations</u>	
<u>COLUMN</u>	<u>DESCRIPTION</u>
Month	Expiration Month/Year
Bid Mbr(1)	Bid Member ID
WrkBuys(2)	Working Buys for entire Group ID
BidQty	Bid Quantity
ThrshBid(6)	Threshold Bid Price
BidPrc	Bid Price
Bid Qty Accum	Accumulated Bid Quantity
BidPrc Avg	Bid Price Average
AskPrc Avg	Ask Price Average
AskQty Accum	Accumulated Ask Quantity
AskPrc	Ask Price
ThrshAsk(6)	Threshold Ask Price
AskQty	Ask Quantity
WrkSells(2)	Working Sells for entire Group ID
Ask Mbr(1)	Ask Member ID
NetPos	Net Position

App. 376

FFNetPos	Fast Fill Net Position
LastPrc	Last Price
LastQty	Last Quantity
Total	Total Traded Quantity
High	High Price
Low	Low Price
Open	Opening Price
Close	Closing Price
Cling	Last Price-Last Close
TheoPrc	Theoretical Price
TheoBid	Theoretical Bid Price
TheoAsk	Theoretical Ask Price
QAct	Quote Action (Sends individual quotes)
BQQ	Test Bid Quote Quantity
BQP	Test Bid Quote Price
Mkt BQQ	Market Bid Quote Quantity
Mkt BQP	Market Bid Quote Price
Quote	Checkbox activates/deactivates contract for quoting
Mkt AQQ	Market Ask Quote Quantity
Mkt AQP	Market Ask Quote Price
AQP	Ask Quote Price
AQQ	Ask Quote Quantity
Imp BidQty(5)	Implied Bid Quantity
Imp BidPrc(5)	Implied Bid Price
Imp AskQty(5)	Implied Ask Quantity
Imp AskPrc(5)	Implied Ask Price
Gamma(3)	Change in Delta given 1 pt change in underlying
Delta(3)	Change in price given 1 pt change in underlying
Vola(3)	Percent volatility

Vega(3)	Price change given 1% change in Vola
Rho(3)	Price change given 1% change in interest rate
Theta(3)	Price change for every day that elapses
Click Trd	Activate/deactivate click trading by contract
S (Status)	Auction, Closed, FastMkt, Not Tradable, Pre-trading, Tradable, S = post-trading
Expiry	Expiration Month/Year

As described herein, the display and trading method of the present invention provide the user with certain advantages over systems in which a display of market depth, as shown in FIG. 2, is used. The Mercury display and trading method of the present invention ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently. An example of such a Mercury display is illustrated in the screen display of FIG. 3.

The display of market depth and the manner in which traders trade within the market depth can be effected in different manners, which many traders will find materially better, faster and more accurate. In addition, some traders may find the display of market depth to be difficult to follow. In the display shown in FIG. 2, the market depth is displayed vertically so that both Bid and Ask prices descend the grid. The

Bid prices descend the market grid as the prices decrease. Ask prices also descend the market grid as these prices actually increase. This combination may be considered counterintuitive and difficult to follow by some traders.

The Mercury display overcomes this problem in an innovative and logical manner. Mercury also provides an order entry system, market grid, fill window and summary of market orders in one simple window. Such a condensed display materially simplifies the trading system by entering and tracking trades in an extremely efficient manner. Mercury displays market depth in a logical, vertical fashion or horizontally or at some other convenient angle or configuration. A vertical field is shown in the figures and described for convenience, but the field could be horizontal or at an angle. In turn, Mercury further increases the speed of trading and the likelihood of entering orders at desired prices with desired quantities. In the preferred embodiment of the invention, the Mercury display is a static vertical column of prices with the bid and ask quantities displayed in vertical columns to the side of the price column and aligned with the corresponding bid and ask prices. An example of this display is shown in FIG, 3.

Bid quantities are in the column **1003** labeled BidQ and ask quantities are in column **1004** labeled AskQ. The representative ticks from prices for the given commodity are shown in column **1005**. The column does not list the whole prices (e.g. 95.89), but rather, just the last two digits (e.g. 89). In the example shown, the inside market, cells **1020**, is 18 (best bid

quantity) at 89 (best bid price) and 20 (best ask quantity) at 90 (best ask price). In the preferred embodiment of the invention, these three columns are shown in different colors so that the trader can quickly distinguish between them.

The values in the price column are static; that is, they do not normally change positions unless a re-centering command is received (discussed in detail later). The values in the Bid and Ask columns however, are dynamic; that is, they move up and down (in the vertical example) to reflect the market depth for the given commodity. The LTQ column **1006** shows the last traded quantity of the commodity. The relative position of the quantity value with respect to the Price values reflects the price at which that quantity was traded. Column **1001** labeled E/W (entered/working) displays the current status of the trader's orders. The status of each order is displayed in the price row where it was entered. For example, in cells **1007**, the number next to S indicates the number of the trader's ordered lots that have been sold at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in the market, but have not been filled—i.e, the system is working on filling the order. Blanks in this column indicate that orders are entered or working at that price. In cells **1008**, the number next to B indicates the number of the trader's ordered lots that have been bought at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in the market, but have not been filled—i.e. the system is working on filling the order.

Various parameters are set and information is provided in column **1002**. For example, “10:48:44” in cell **1009** shows the actual time of day. The L and R fields in cell **1010** indicate a quantity value, which may be added to the order quantity entered. This process is explained below with respect to trading under Mercury. Below the L and R fields, in cell **1011**, a number appears which represents the current market volume. This is the number of lots that have been traded for the chosen contract. Cell **1012**, “X 10”, displays the Net Quantity, the current position of the trader on the chosen contract. The number “10” represents the trader’s buys minus sells. Cell **1013** is the “Current Quantity”; this field represents the quantity for the next order that the trader will send to market. This can be adjusted with right and left clicks (up and down) or by clicking the buttons which appear below the Current Quantity in cells **1014**. These buttons increase the current quantity by the indicated amount; for example, “10” will increase it by 10; “1H” will increase it by 100; “1K” will increase it by 1000. Cell **1015** is the Clear button; clicking this button will clear the Current Quantity field. Cell **1016** is the Quantity Description; this is a pull down menu allowing the trader to choose from three Quantity Descriptions. The pull down menu is displayed when the arrow button in the window is clicked. The window includes NetPos, Offset and a field allowing the trader to enter numbers. Placing a number in this field will set a default buy or sell quantity. Choosing “Offset” in this field will enable the L/R buttons of cell **1010**. Choosing “NetPos” in this field will set the current Net Quantity (trader’s net position) as the trader’s quantity for his next trade. Cell **1017** are +/- buttons;

these buttons will alter the size of the screen—either larger (+) or smaller (-). Cell **1018** is used to invoke Net 0; clicking this button will reset the Net Quantity (cell **1011**) to zero, Cell **1019** is used to invoke Net Real; clicking this button will reset the Net Quantity (cell **1011**) to its actual position.

The inside market and market depth ascend and descend as prices in the market increase and decrease. For example, FIG. 4 shows a screen displaying the same market as that of FIG. 3 but at a later interval where the inside market, cells **1101**, has risen three ticks. Here, the inside market for the commodity is 43 (best bid quantity) at 92 (best bid price) and 63 (best ask quantity) at 93 (best ask price). In comparing FIGS. 3 and 4, it can be seen that the price column remained static, but the corresponding bids and asks rose up the price column. Market Depth similarly ascends and descends the price column, leaving a vertical history of the market.

As the market ascends or descends the price column, the inside market might go above or below the price column displayed on a trader's screen. Usually a trader will want to be able to see the inside market to assess future trades. The system of the present invention addresses this problem with a one click centering feature. With a single click at any point within the gray area, **1021**, below the "Net Real" button, the system will re-center the inside market on the trader's screen. Also, when using a three-button mouse, a click of the middle mouse button, irrespective of the location of the mouse pointer, will re-center the inside market on the trader's screen.

The same information and features can be displayed and enabled in a horizontal fashion. Just as the market ascends and descends the vertical Mercury display shown in FIGS. 3 and 4, the market will move left and right in the horizontal Mercury display. The same data and the same information gleaned from the dynamical display of the data is provided. It is envisioned that other orientations can be used to dynamically display the data and such orientations are intended to come within the scope of the present invention.

Next, trading commodities, and specifically, the placement of trade orders using the Mercury display is described. Using the Mercury display and trading method, a trader would first designate the desired commodity and, if applicable, the default quantities. Then he can trade with single clicks of the right or left mouse button. The following equations are used by the system to generate trade orders and to determine the quantity and price to be associated with the trade order. The following abbreviations are used in these formulas: P=Price value of row clicked, R=Value in R field, L=Value in L field, Q=Current Quantity, Q_a =Total of all quantities in AskQ column at an equal or better price than P, Q_b =Total of all quantities in BidQ column at an equal or better price than P, N=Current Net Position, Bo=Buy order sent to market and So=Sell order sent to market.

Any Order Entered Using Right Mouse Button

$$Bo=(Q_a+R)P \text{ If BidQ field clicked,} \quad (\text{Eq. 1})$$

$$So=(Q_b+R)P \text{ If AskQ field clicked.} \quad (\text{Eq. 2})$$

Orders Entered Using the Left Mouse Button

If “Offset” mode chosen in Quantity Description field then:

$$Bo=(Q_a+L)P \text{ If BidQ field clicked.} \quad (\text{Eq. 3})$$

$$So=(Q_b+L)P \text{ If AskQ field clicked.} \quad (\text{Eq. 4})$$

If “number” mode chosen in Quantity Description field then:

$$Bo=QP \quad (\text{Eq. 5})$$

$$So=QP \quad (\text{Eq. 6})$$

If “NetPos” mode chosen in Quantity Description field then:

$$Bo=NP \quad (\text{Eq. 7})$$

$$So=NP \quad (\text{Eq. 8})$$

Orders can also be sent to market for quantities that vary according to the quantities available in the market; quantities preset by the trader; and which mouse button the trader clicks. Using this feature, a trader can buy or sell all of the bids or asks in the market at or better than a chosen price with one click. The trader could also add or subtract a preset quantity from the quantities outstanding in the market. If the trader clicks in a trading cell—i.e, in the BidQ or AskQ column, he will enter an order in the market. The parameters of the order depend on which mouse button he clicks and what preset values he set.

Using the screen display and values from FIG. 5, the placement of trade orders using the Mercury display and trading method is now described using examples. A left click on the 18 in the BidQ column **1201** will send an order to market to sell 17 lots (quantity # chosen on the Quantity Description pull down menu

cell **1204**) of the commodity at a price of 89 (the corresponding price in the Prc column **1203**). Similarly, a left click on the 20 in the AskQ column **1202** will send an order to market to buy 17 lots at a price of 90,

Using the right mouse button, an order would be sent to market at the price that corresponds to the row clicked for the total quantity of orders in the market that equal or better the price in that row plus the quantity in the R field **1205**. Thus, a right click in the AskQ column **1202** in the 87 price row will send a sell order to market at a price of 87 and a quantity of 150. 150 is the sum of all the quantities 30, 97, 18 and 5. 30, 97 and 18 are all of the quantities in the market that would meet or better the trader's sell order price of 87. These quantities are displayed in the BidQ column **1201** because this column represents the orders outstanding in the market to purchase the commodity at each corresponding price. The quantity 5 is the quantity pre-set in the R field **1205**.

Similarly, a right click in the BidQ column **1201** at the same price level of 87 would send a buy limit order to market for a quantity of 5 at a price of 87. The quantity is determined in the same manner as above. In this example, though, there are no orders in the market that equal or better the chosen price—there are no quantities in the AskQ column **1202** that equal or better this price. Therefore, the sum of the equal or better quantities is zero (“0”). The total order entered by the trader will be the value in the R field, which is 5,

An order entered with the left mouse button and the “Off-set” option chosen in the quantity description field **1204** will be calculated in the same way as above,

but the quantity in the L field **1206** will be added instead of the quantity in the R field **1205**. Thus, a left click in the BidQ column **1201** in the 92 price row will send a buy order to market at a price of 92 and a quantity of 96. 96 is the sum of all the quantities 45, 28, 20 and 3. 45, 28 and 20 are all quantities in the market that would meet or better the trader's buy order price of 92. These quantities are displayed in the AskQ column **1202** because this column represents the orders outstanding in the market to sell the commodity at each corresponding price. The quantity 3 is the quantity pre-set in the L field **1206**.

The values in the L or R fields may be negative numbers. This would effectively decrease the total quantity sent to market. In other words, in the example of a right click in the AskQ column **1202** in the 87 price row, if the R field was -5, the total quantity sent to market would be 140 ($30+97+18+(-5)$).

If a trader chose the "NetPos" option in the quantity description field **1204**, a right click would still work as explained above. A left click would enter an order with a price corresponding to the price row clicked and a quantity equal to the current Net position of the trader. The Net position of the trader is the the trader's current position on the chosen contract. In other words, if the trader has bought 10 more contracts than he has sold, this value would be 10. Net-Pos would not affect the quantity of an order sent with a right click.

If the trader chose a number value in the quantity description, a left click would send an order to market for the current quantity chosen by the trader. The default value of the current quantity will be the number

entered in the quantity description field, but it could be changed by adjusting the figure in the current quantity field **1204**.

This embodiment of the invention also allows a trader to delete all of his working trades with a single click of either the right or left mouse button anywhere in the last traded quantity (LTQ) column **1207**. This allows a trader to exit the market immediately. Traders will use this feature when they are losing money and want to stop the losses from piling up. Traders may also use this feature to quickly exit the market upon making a desired profit. The invention also allows a trader to delete all of his orders from the market at a particular price level. A click with either mouse button in the Entered/Working (E/W) column **1208** will delete all working orders in the cell that was clicked. Thus, if a trader believes that previously sent orders at a particular price that have not been filled would be poor trades, he can delete these orders with a single click.

The process for placing trade orders using the Mercury display and trading method of the present invention as described above is shown in the flowchart of FIG. 6. First, in step **1301**, the trader has the Mercury display on the trading terminal screen showing the market for a given commodity. In step **1302**, the parameters are set in the appropriate fields, such as the L and R fields and the Current Quantity, NetPos or Offset fields from the pull down menu. In step **1303**, the mouse pointer is positioned and clicked over a cell in the Mercury display by the trader. In step **1304**, the system determines whether the cell clicked is a tradeable cell (i.e, in the AskQ column or

BidQ column). If not, then in step **1305**, no trade order is created or sent and, rather, other quantities are adjusted or functions are performed based upon the cell selected. Otherwise, in step **1306**, the system determines whether it was the left or the right button of the mouse that was clicked. If it was the right, then in step **1307**, the system will use the quantity in the R field when it determines the total quantity of the order in step **1310**. If the left button was clicked, then in step **1308**, the system determines which quantity description was chosen: Offset, NetPos or an actual number.

If Offset was chosen, then the system, in step **1309**, will use the quantity in the L field when it determines the total quantity of the order in step **1310**. If NetPos was chosen, then the system, in step **1312**, will determine that the total quantity for the trade order will be current NetPos value, i.e. the net position of the trader in the given commodity. If an actual number was used as the quantity description, then, in step **1311**, the system will determine that the total quantity for the trade order will be the current quantity entered. In step **1310**, the system will determine that the total quantity for the trade order will be the value of the R field (if step **1307** was taken) or the value of the L field (if step **1309** was taken) plus all quantities in the market for prices better than or equal to the price in the row clicked. This will add up the quantities for each order in the market that will fill the order being entered by the trader (plus the L or R value).

After either steps **1310**, **1311** or **1312**, the system, in step **1313**, determines which column was clicked,

BidQ or AskQ. If AskQ was clicked, then, in step **1314**, the system sends a sell limit order to the market at the price corresponding to the row for the total quantity as already determined. If BidQ was clicked, then, in step **1315**, the system sends a buy limit order to the market at the price corresponding to the row for the total quantity as already determined.

It should be understood that the above description of the invention and specific examples, while indicating preferred embodiments of the present invention, are given by way of illustration and not limitation. Many changes and modifications within the scope of the present invention may be made without departing from the spirit thereof, and the present invention includes all such changes and modifications.

We claim:

1. A method of placing a trade order for a commodity on an electronic exchange using a graphical user interface and a user input device, the method comprising:

receiving data relating to the commodity from the electronic exchange, the data comprising an inside market with a highest bid price and a lowest ask price currently available for the commodity;

dynamically displaying via a computing device a first indicator in one of a plurality of areas in a bid display region, each area in the bid display region corresponding to a price level along a price axis, the first indicator representing a quantity associated with at least one order to buy the commodity at the highest bid price;

dynamically displaying via the computing device a second indicator in one of a plurality of areas in an ask display region, each area in the ask display region corresponding to a price level along the price axis, the second indicator representing a quantity associated with at least one order to sell the commodity at the lowest ask price;

displaying an order entry region comprising a plurality of locations for receiving single action commands to send trade orders, the plurality of locations including:

- (a) at least one first fixed location corresponding to a first price level along the price axis associated with the highest bid price currently available in the market, wherein upon receipt of new data representing an updated highest bid price currently available for the commodity, the at least one first fixed location continues to correspond to the first price level even if the first price level is no longer associated with the highest bid price currently available in the market; and
- (b) at least one second fixed location corresponding to a second price level along the price axis associated with the lowest ask price currently available in the market, wherein upon receipt of new data representing an updated lowest ask price currently available for the commodity, the at least one second fixed location continues to correspond to the second price level

even if the second price level is no longer associated with the lowest ask price currently available in the market;

updating the display of the first indicator such that the first indicator is moved relative to the price axis to a different area in the bid display region corresponding with a different price level along the price axis in response to receipt of new data representing an updated highest bid price currently available for the commodity;

updating the display of the second indicator such that the second indicator is moved relative to the price axis to a different area in the ask display region corresponding with a different price level along the price axis in response to receipt of new data representing an updated lowest ask price currently available for the commodity; and

setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange in response to a selection of a particular location of the order entry region by a single action of a user input device.

2.The method of claim **1**, wherein the bid display region, the ask display region, and the order entry region are oriented vertically.

3.The method of claim **1**, wherein the bid display region, the ask display region, and the order entry region are oriented horizontally.

4.The method of claim **1**, wherein the order entry region comprises:

a bid order entry region comprising a plurality of locations for receiving commands to send buy orders, each location corresponding to a price level along the price axis; and

an ask order entry region comprising a plurality of locations for receiving commands to send sell orders, each location corresponding to a price level along the price axis.

5.The method of claim **4**, wherein the bid order entry region overlaps with the bid display region, and wherein the ask order entry region overlaps with the ask display region.

6.The method of claim **4**, further comprising dynamically displaying an entered order indicator in association with a price level along the price axis, wherein the entered order indicator represents an order pending at the electronic exchange.

7.The method of claim **6**, further comprising sending a message to the electronic exchange to delete the order represented by the entered order indicator in response to a single action of the user input device with a pointer of the user input device positioned over the entered order indicator.

8.The method of claim **7**, wherein the single action of the user input device that results in sending the message to the electronic exchange to delete the order consists of a single click of the user input device with the pointer of the user input device positioned over the entered order indicator.

9.The method of claim **8**, wherein the single action of the user input device that results in sending the message to the electronic exchange to delete the order

consists of a double click of the user input device with the pointer of the user input device positioned over the entered order indicator.

10. The method of claim **1**, further comprising dynamically displaying a last trade indicator in association with the price axis.

11. The method of claim **1**, wherein the bid and ask display regions are displayed in a window, the method further comprising centering the display of the first and second indicators in the window upon receipt of a centering instruction.

12. The method of claim **1**, wherein the plurality of parameters comprises a price and type of order.

13. The method of claim **1**, wherein the order entry region comprises a plurality of first locations corresponding to the first price level along the price axis.

14. The method of claim **13**, wherein the plurality of first locations are within a cell.

15. The method of claim **13**, wherein after receipt of new data representing an updated highest bid price currently available for the commodity, the plurality of first locations continues to correspond to the first price level even if the first price level is no longer associated with the highest bid price currently available in the market.

16. The method of claim **1**, wherein the order entry region comprises a plurality of second locations corresponding to the second price level along the price axis.

17. The method of claim **16**, wherein the plurality of second locations are within a cell.

18. The method of claim **16**, wherein after receipt of new data representing an updated highest bid price currently available for the commodity, the plurality of second locations continues to correspond to the second price level even if the second price level is no longer associated with the lowest ask price currently available in the market.

19. The method of claim **1**, wherein an area of the plurality of areas in the bid display region is a cell of a grid.

20. The method of claim **1**, wherein an area of the plurality of areas in the ask display region is a cell of a grid.

21. The method of claim **1**, wherein the single action of the user input device for setting the plurality of parameters for the trade order relating to the commodity and sending the trade order to the electronic exchange consists of a single click of the user input device.

22. The method of claim **1**, wherein the single action of the user input device for setting the plurality of parameters for the trade order relating to the commodity and sending the trade order to the electronic exchange consists of a double click of the user input device.

23. A computer readable medium having program code recorded thereon for execution on a computer for displaying market information relating to and facilitating trading of a commodity being traded

in an electronic exchange on a graphical user interface, the program code causing a machine to perform the following method steps:

- receiving data relating to the commodity from the electronic exchange, the data comprising an inside market with a highest bid price and a lowest ask price currently available for the commodity;

- dynamically displaying a first indicator in one of a plurality of areas in a bid display region, each area in the bid display region corresponding to a price level along a price axis, the first indicator representing a quantity associated with at least one order to buy the commodity at the highest bid price;

- dynamically displaying a second indicator in one of a plurality of areas in an ask display region, each area in the ask display region corresponding to a price level along the price axis, the second indicator representing a quantity associated with at least one order to sell the commodity at the lowest ask price;

- displaying an order entry region comprising a plurality of locations for receiving single action commands to send trade orders, the plurality of locations including:

- (a) at least one first fixed location corresponding to a first price level along the price axis associated with the highest bid price currently available in the market, wherein upon receipt of new data representing an updated highest bid price currently available for the commodity, the at

least one first fixed location continues to correspond to the first price level even if the first price level is no longer associated with the highest bid price currently available in the market; and

- (b) at least one second fixed location corresponding to a second price level along the price axis associated with the lowest ask price currently available in the market, wherein upon receipt of new data representing an updated lowest ask price currently available for the commodity, the at least one second fixed location continues to correspond to the second price level even if the second price level is no longer associated with the lowest ask price currently available in the market;

updating the display of the first indicator such that the first indicator is moved relative to the price axis to a different area in the bid display region corresponding with a different price level along the price axis in response to receipt of new data representing an updated highest bid price currently available for the commodity;

updating the display of the second indicator such that the second indicator is moved relative to the price axis to a different area in the ask display region corresponding with a different price level along the price axis in response to receipt of new data representing an updated lowest ask price currently available for the commodity; and

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setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange in response to a selection of a particular location of the order entry region by a single action of a user input device.

* * * * *

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UNITED STATES PATENT AND TRADEMARK
OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,693,768 B2
APPLICATION NO. : 11/585906
DATED : April 6, 2010
INVENTOR(S) : Gary Allan Kemp, II
et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Claim 18, column 13, line 36: please delete
“highest bid” and insert --lowest ask--.

Signed and Sealed this

Sixth Day of December, 2011

David J. Kappos

*Director of the United States Patent and Trademark
Office*

(10) **Patent No.:** **US 7,725,382 B2**

(12) **United States Patent Kemp, II et al.**

(45) **Date of Patent:** ***May 25, 2010**

(54) **CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH**

(75) **Inventors:** **Gary Allan Kemp, II**, Winnetka, IL (US); **Jens-Uwe Schluetter**, Evanston, IL (US); **Harris Brumfield**, Chicago, IL (US)

(73) **Assignee:** **Trading Technologies International, Inc.**, Chicago, IL (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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- (63) Continuation of application No. 11/415,163, filed on May 2, 2006, which is a continuation of application No. 10/237,131, filed on Sep. 9, 2002, now abandoned, which is a continuation of application No. 09/590,692, filed on Jun. 9, 2000, now Pat. No. 6,772,132.
- (60) Provisional application No. 60/186,322, filed on Mar. 2, 2000.
- (51) **Int. Cl.**
G06Q 40/00 (2006.01)
- (52) **U.S. Cl.** **705/37;**
..... 705/35;705/3
- (58) **Field of Classification**
Search 705/35-45
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

- 4,674,044 A 6/1987 Kalmus et al.
- 4,750,135 A 6/1988 Boilen
- 4,903,201 A 2/1990 Wagner
- 5,038,284 A 8/1991 Kramer
- 5,077,665 A 12/1991 Silverman et al.

(Continued)

FOREIGN PATENT DOCUMENTS

- EP 1 319 211 B1 4/1998

App. 400

(Continued)

OTHER PUBLICATIONS

Tokyo Stock Exchange, Futures?optionsTrading System, Pubication 2.*

(Continued)

Primary Examiner—Richard C Weisberger
(74) *Attorney, Agent, or Firm*—McDonnell Boehnen Hulbert & Berghoff LLP

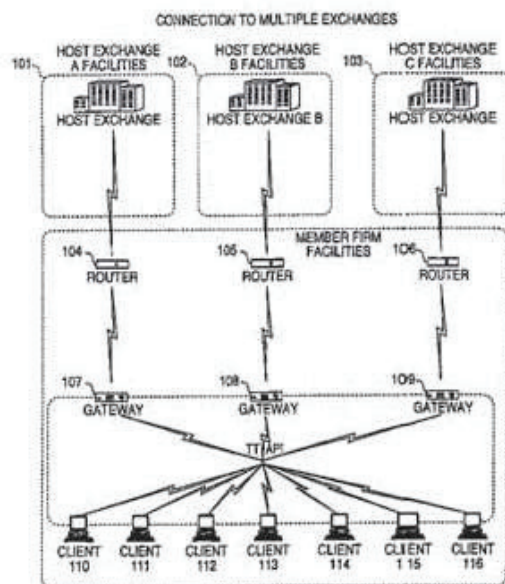
(57)

ABSTRACT

A method and system for reducing the time it takes for a trader to place a trade when electronically trading on an exchange, thus increasing the likelihood that the trader will have orders filled at desirable prices and quantities. The “Mercury” display and trading method of the present invention ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently.

32 Claims, 6 Drawing Sheets

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U.S. PATENT DOCUMENTS

5,101,353	A	3/1992	Lupien et al.
5,136,501	A	8/1992	Silverman et al.
5,243,331	A	9/1993	McCausland et al.
5,270,922	A	12/1993	Higgins
5,297,031	A	3/1994	Gutterman et al.
5,297,032	A	3/1994	Trojan et al.
5,689,651	A	11/1997	Lozman
5,774,877	A	6/1998	Patterson, Jr. et al.
5,793,301	A	8/1998	Patterson, Jr. et al.
5,797,002	A	8/1998	Patterson, Jr. et al.
5,845,266	A	12/1998	Lupien et al.
5,915,245	A	6/1999	Patterson, Jr. et al.
5,924,082	A	7/1999	Silverman et al.
5,924,083	A	7/1999	Silverman et al.
5,946,667	A	8/1999	Tull, Jr. et al.

App. 402

5,960,411	A	9/1999	Hartman et al.
5,963,923	A	10/1999	Garber
6,012,046	A	1/2000	Lupien et al.
6,014,643	A	1/2000	Minton
6,035,287	A	3/2000	Stallaert et al.
6,098,051	A	8/2000	Lupien et al.
6,115,698	A	9/2000	Tuck et al.
6,131,087	A	10/2000	Luke et al.
6,134,535	A	10/2000	Belzberg
6,195,647	B1	2/2001	Martyn et al.
6,272,474	B1	8/2001	Garcia
6,278,982	B1	8/2001	Korhammer et al.
6,282,521	B1	8/2001	Howorka
6,343,278	B1	1/2002	Jain et al.
6,408,282	B1	6/2002	Buist
6,421,653	B1	7/2002	May et al.
6,766,304	B2	7/2004	Kemp, II
6,772,132	B1	8/2004	Kemp, II
6,938,011	B1	8/2005	Kemp, II
2002/0023038	A1	2/2002	Fritsch et al.
2002/0055899	A1	5/2002	Williams
2002/0138401	A1	9/2002	Allen et al.
2003/0097325	A1	5/2003	Friesen et al.
2005/0149429	A1	7/2005	Kemp, II
2006/0195389	A1	8/2006	Kemp, II
2007/0038554	A1	2/2007	Kemp, II
2007/0038555	A1	2/2007	Kemp, II
2007/0038556	A1	2/2007	Kemp, II
2007/0038557	A1	2/2007	Kemp, II

FOREIGN PATENT DOCUMENTS

WO	WO 91/14231	9/1991
WO	WO 95/26005	9/1995

App. 403

WO	WO 98/49639	11/1998
WO	WO 99/19821	4/1999
WO	WO 99/30259	6/1999
WO	WO 99/53424	10/1999
WO	WO 00/52619	9/2000
WO	WO 00/62187	10/2000
WO	WO 00/65510	11/2000
WO	WO 01/16830	3/2001
WO	WO 01/16852	3/2001
WO	WO 01/22315	3/2001
WO	WO 01/88808	11/2001

OTHER PUBLICATIONS

www.tradingtechnologies.com/products/xtrade_full.html (viewed May 22, 2001).

Kharouf, "A trading room with a view," *Futures*, 27, 11, Nov. 1998, USPTO Presentation, NASDAQ, Nov. 8, 2001, enclosed pp. 1-13. Tokyo Stock Exchange, Publication 1, "Next-Generation Futures Options Trading System" (participants seminar materials), Sep. 1997.

English Translation of Tokyo Stock Exchange, Publication 1, "Next-Generation Futures Options Trading System" (participants seminar materials), Sep. 1997.

REFCO English Translation of Tokyo Stock Exchange, Publication 1, "Next-Generation Futures Options Trading System" (participants seminar materials), Sep. 1997.

Tokyo Stock Exchange, Publication 2, "Futures/Options Trading System Guidelines for Operating the Trading Terminals", Aug. 1998. English Translation

of Tokyo Stock Exchange, Publication 2, “Futures/Options Trading System Guidelines for Operating the Trading Terminals”, Aug. 1998.

REFCO English Translation of Tokyo Stock Exchange, Publication 2, “Futures/Options Trading System Guidelines for Operating the Trading Terminals”, Aug. 1998.

Tokyo Stock Exchange, Document 1, “Downloading the Terminal Program and Sending the Replacement for the Guidelines for Operating the Trading Terminals”, Jan. 2000.

English Translation of Tokyo Stock Exchange, Document 1, “Downloading the Terminal Program and Sending the Replacement for the Guidelines for Operating the Trading Terminals”, Jan. 2000.

Tokyo Stock Exchange, Publication 3, “Tokyo Stock Exchange 50th Anniversary Book of Materials”, Jul. 31, 2000.

English Translation of Tokyo Stock Exchange, Publication 3, “Tokyo Stock Exchange 50th Anniversary Book of Materials”, Jul. 31, 2000.

REFCO English Translation Tokyo Stock Exchange, Publication 3, “Tokyo Stock Exchange 50th Anniversary Book of Materials”, Jul. 31, 2000.

English Translation of Tokyo Stock Exchange Offer Form, Apr. 18, 2005.

Information Offer Form, Apr. 18, 2005.

Notification of Information Offer Form, Jun. 3, 2005.

“APT: A trading system for the future,” The London International Financial Futures Exchange (LIFFE), 1990, II pages.

Trading Screen, INTEX of Bermuda, 1984, one page.

B.W. Weber, “Information Technology in the Major International Financial Markets,” Stern School of

Business, New York University, Apr. 7, 1993, pp. 1-43.

Trading Screen, TIFFE Exchange, circa 1989-1990, one page.

Trading Screen, MEFF Exchange, 1990, one page.

C. Cavaletti, "Order Routing," Futures Magazine, Feb. 1997, pp. 68-70.

"Aurora: The most technologically advanced trading system available today," Chicago Board of Trade, 1989, 11 pages.

"One Click Trading Options," Trading Technologies, Inc., 1998, one page.

Trading Screen, SWX Exchange, 1990, two pages.

"Expanding futures and options trading around the world, around the clock," Globex, 1989, 48 pages.

S. Hansell, "The computer that ate Chicago," Institutional Investor, Feb. 1989, 5 pages.

"Sydney Futures Exchange Announces Plans to Join Globex," Globex Report: An Update on the CME global electronic exchange, vol. II, No. 2, Feb. 10, 1989, 4 pages.

New York Mercantile Exchange (NYMEX) Access Documents, Feb. 28, 1992, 413 pages.

The Computer Assisted Trading System (CATS) Traders' Manual, Toronto Stock Exchange, Sep. 30, 1977, 142 pages.

Market Watch trading screen, date not available, 1 page.

Grummer et al., "Preliminary Feasibility Study," Bermudex Ltd., Nov. 1980, 100 pages.

Peake et al., Appendix C of Preliminary Feasibility Study, "The ABCs of trading on a national market system," Bermudex Ltd., Sep. 1997, 16 pages.

J.W. Peake, Appendix E of Preliminary Feasibility Study, "The last fifteen meters," Bermudex Ltd., Jun. 15, 1997, 18 pages.

Declaration of Brendan Bradley in Case No. 04 C 5312, Nov. 18, 2004, 27 pages.

Memorandum Opinion and Order of Judge James B. Moran in Case No. 04 C 5312, Feb. 9, 2005, 22 pages.

GL Trade, CAC and Stoxx Futures on MATIF NSC VF, User Information Notes, pp. 1-14, published by GL Trade, London, England, Mar. 15, 1999.

eSpeed's Supplemental Invalidity Contentions, May 25, 2007.

eSpeed's Disclosure of Invalidity Contentions Pursuant to 35 USC 282, May 25, 2007.

Invalidity Contentions Re: TradePad Module (Letter Dated May 25, 2007).

Supplemental Invalidity Contentions Pursuant to 35 U.S.C. 282, Aug. 10, 2007.

eSpeed's and Ecco's Answers to Plaintiff's Eighth Set of Interrogatories, Aug. 4, 2006.

eSpeed and Ecco's Supplemental Answers to Plaintiff's First, Third, Seventh, Eighth, and Ninth Set of Interrogatories, May 25, 2007.

Defendant GL Trade Americas, Inc's Supplemental Responses and Objections to Interrogatory Nos. 5, 17, and 18, Jul. 24, 2006.

eSpeed's Objections and Answers to Plaintiff's Third Set of Interrogatories to Defendant eSpeed, May 12, 2005.

GL WIN Version 4.50, Mar. 3, 1999, DX 538, G 107459-G 107480, DTX 538.

Trading Pad User Manual, Aug. 10, 1999, DX 539, G 112123-G 112131, DTX 539.

App. 407

Email from Wattier to M. Cartier attaching Matif VF: V4.50 manual, Mar. 30, 1998, DX 592, MC000046-MC000116, DTX 592.

User Guide V4.60 LIFFE Connect for Futures by GL Trade, 06/00/99, DX 605,G 123548-G 123603, DIX 605.

“A System and Method for Conducting Security Transactions Over a Computer Network”, Mauro & Buist, Mar. 1, 1999, DX 196, eS 066150-eS 066229, DTX 196.

RCG’s Presentation re WitCapital, Apr. 22, 2004, DX 208, RCG 000635-RCG 000663, DTX 208.

Mauro, Certified U.S. Appl. No. 09/292,552, filed Apr. 15, 1999, DX 209, eS 065994-eS 066149.

Various declarations Re: U.S. Appl. No. 09/292,552, Nov. 3, 2003, DX 284, TT 099877-TT 099907, DTX 284.

EVENSTREET Presentation prepared for National Discount Brokers, 00/00/1999, DX 301, CM 006787-CM 006817, DTX 301.

WIT DSM user interface instructions, Aug. 6, 1998, DX 427, CM 006591-CM 006632, DTX 427.

Presentation re WIT DSM user interface Trade4.ppt, Oct. 12, 1998, DX 430, CM 008265-CM 008330, DTX 430.

WIT DSM Presentation re Information display and decision variables, Dec. 20, 1998, DX 431, CM 004334-CM 004347, DTX 431.

EVENSTREET Presentation prepared for Flatiron Partners, 00/00/1999, DX 437, CM 007139-CM 007172, DTX 437.

WIT Capital digital trading facility presentation to Goldman Sachs, DX 438, CM 004523-CM 004547, DTX 438.

App. 408

WIT Capital Digital trading facility presentation to PaineWebber, Inc., DX 439, DTX 439.

WIT Capital after hours trading system, Mauro, Mar. 19, 1999, DX 440, CM 009028-CM 009059, DTX 440.

WIT Capital Corporation digital trading facility presentation, 03/00/99, DX 441, DTX 441.

WIT Capital pdf operator manual for Digital trading facility, 00/00/1999, DX 442, CM 006510-CM 006513, DTX 442.

Overview re Digital trading facility, DX 443, CM 006315-CM 006344, DTX 443.

Utility Patent Application Transmittal Re: Computer Trading System, Method and Interface, Apr. 15, 1999, Mauro, Kleia, and Buist, PX368.

Photocopy of Disks containing exhibits A and B to declaration of W. Buist, PX366.

SISS Functional specifications version 2.1, Feb. 16, 1988, DX 445, DTX 445.

Overview re SPATS; the Electronic Broker, DX 446, DTX 446.

Status review specialist support system study NYSE, Apr. 10, 1986, DX 447, DTX 447.

Declaration of W. Buist re: WIT DSM System, Apr. 26, 2006, PX 365, DTX 1777.

Sample screens of APT system, DX 150, DTX 150.

Photo of trader w/ APT screen, DX 151, LIFFE 00167-LIFFE 00168, DTX 151.

APT User Guide, 01/00/94, DX 152, LIFFE 000262-LIFFE 000363, DTX 152.

LIFFE guide/pamphlet, DX 148, DTX 148.

Release Notes—Market Trader V5.2A, Mar. 18, 1999, DX 617, G 118137-G 118152, DTX 617.

Market Trader—Nikkei 225 & Nikkei 300 Index options and Index futures trading users guide, Mar. 20, 1998, DX 618, 0100444-0100462, DTX 618.

Midas Kapiti Delivery Note and Release Note- Market Trader V5.2b, Mar. 31, 1999, DX 619, G 096511-G 096527, DTX 619.

Midas Kapiti Release Notes—Market Trader V5.2e, Apr. 12, 1999, DX 620, G 096694- G 096711, DTX 620.

Midas Kapiti Release Notes—Market Trader V5.2, DX 621, G 096712 -G 096727, DTX 621, May 26, 1999.

Midas Kapiti Release Notes—Market Trader V5.2e, DX 622, G 096728-G 096754, DTX 622, Jun. 1, 1999.

Midas Kapiti Delivery Note and Release Note-Market TraderV5.2e, DX 623, G 105641- G 105667, DTX 623, May 26, 1999.

Drawing of 1997 TSE terminal by H. Kida, DX 624, DTX 624.

Directory of Software Solutions for LIFFE Connect, 02/0099, DX 156, DTX 156.

ScreenShots: Patsystem “Canned” Demo, 02/00/97, DX 120, PATS 00545- PATS 00559, DIX 120.

PTS Client Version 2.1F, DX 119, PATS 00067-PATS 00082, DTX 119.

PTS trading application Version 1.1 Beta H.1, Mar. 31, 1998, DX 118, PATS 00560 -PATS 00560, DTX 118.

Directory of Software Solutions for LIFFE Connect, Issue 1, 10/00/1998, DX 155, MX 155.

Directory of Software Solutions for LIFFE Connect, Issue 3, Jun. 10, 1999, DX 157, DTX 157.

Trading Technologies Trader System User Documentation, Apr. 1, 1998, Release 3.10, DX 3, TT 015867-TT 015955, DTX 3.

App. 410

Aurora Chicago Board of Trade Brochure, 1990, ES0021230-ES0021241.

Ecco Consulting Study Report MEFF Software Systems, Mar. 17, 1999, ES0060578-ES0060591.

Osaka Stock Exchange Manual (Japanese Document), Apr. 1996 REFC00009773-REFC00009826.

TSE Manual (Japanese Document), Nov. 15, 2005, DX179, TSE647-995, w/certified translation eS62258-62366 [TSE609-647, 694-711, 714-721, 735-736, 749-756, 759-760, 779-782, 784-810, 982-995].

TIFFE Manual (Japanese Document), Jan. 1996, REFCO0010861-REFCO0011210, (translation included as cite No. 175).

Final Detailed Design Document Nymex Access, May 5, 1992, eS0003127-eS0003541.

The Application Program Interface (API) Reference Manual for LIFFE Connect, Release 3.0, Sep. 1998, DDX 159, DTX 159, eS00060055-eS00060145.

The Application Program Interface (API) Reference Manual for LIFFE Connect, Release 3.2, Dec. 1998, DDX 161, DTX 161, eS00060239-eS00060331.

The Application Program Interface (API) Reference Manual for LIFFE Connect, Release 3.3, Jan. 1999, DDX 162, DTX 162, eS00059959-eS00060054.

The Application Program Interface (API) Reference Manual for LIFFE Connect, Release 2.7, Sep. 1998, DDX 163, DTX 163, eS00059868-eS00059958.

OM Click Trade User's Guide for Windows NT, 10/00/1998, eS00064671-eS00064773.

Globex Members Handbook, 6/00/1992, DX632, DTX632, eS006974-eS0069818.

The Complete GLOBEX2 Handbook, 5/00/1998, DX635, DTX635, CME-E0010679-0010891.

App. 411

The Complete GLOBEX2 Handbook, 7/00/1998, DX637, DTX637, CME-E 014048- CME-E 014286.
MINEX Service Outline User Test/Orientation, Sep. 1992, eS0064647-eS0064670.
ORC Instructions for Use Version 2.2.8., 0/0/1999, eS0064775-eS0032572.
Interactive Brokers, "Trade Futures Online with Interactive Brokers", May 9, 2005, eS0032571-eS0032572.
Nicholas Economides, "Electronic Call Market Trading", Journal of Portfolio Management, 2/00/1995, eS0069585-eS0069610.
GL Trading Pad Manual, G0020819-60020826.
TradePad Instructions (French), G0025748-G0025749.
TradePad.vsd Document, Feb. 9, 1999, G011169-G0111670.
Trading pad.doc Document, Jan. 26, 1999, G0111671-G0111672.
GL Win et Logiciels complementaires (French), 10//00/99, G009121-G009486.
GL Win et Logiciels complementaires (French), 7/00/99, G009875-G010238.
Memo re: Dual Access Version 4.5 release, Mar. 21, 1999, G0022956-G0022959:.
tradepad.txt (French), Mar. 8, 2000, G0025616-G0025618.
GL Enhancements Software Version 4.11f, Oct. 29, 1998, G0060853-G0060854.
GL Enhancements Update, Jan. 27, 1999, G0101682-G0101688.
LIFFE Connect Futures Release Note 050399.doc, Mar. 3, 1998, G0111402-G0111407.
TradingPad.doc, Apr. 30, 1999, G0112117-G0112122.

App. 412

TradingPadUserManual.doc, Aug. 10, 1999, G0112123-G0112131.
GL Win Version 4.51, G0118856-G0118865.
GL Trade Presentation (French), Apr. 25, 1999, G0118989-G0119044.
LIFFE Connect Futures Functional Technical Issues to Resolve, Apr. 12, 2007, G0119049-G0119050.
LIFFE Connect for Equity Options User Guide v4.30, Nov. 1998, G0119052-G0119086.
Member Participation in the Futures Market, Apr. 12, 1999, G0119196-G0119197.
Email from Patricia Gauthier to Sam Page, Jan. 25, 1999, G0119377-G0119380.
LIFFE Connect ISV Circular No. 001.99, Jan. 8, 1999, G0119566-G0119568.
LIFFE Connect ISV Circular No. 14.99, Mar. 2, 1999, G0119583-G0119590.
LIFFE Connect ISV Circular No. 004.99, Jan. 15, 1999, G119615-G0119616.
LIFFE Connect ISV Circular No. 001.99, Jan. 15, 1999, G0119617-G0119618.
LIFFE Connect ISV Circular No. 008.98, Dec. 28, 1998, G0119631-G0119632.
Screenshot of GL TradePad, G0119660.
LIFFE Connect for Futures Schedule for Project Deliverables, Feb.4, 1999, G0119681-G0119682.
LIFFE Connect for Futures-Project Update #1, Meeting of Jan. 11, 1999, G0119691-G0119697.
LIFFE Connect for Futures: Project Update 2, Meeting of Feb. 10, 1999, G0119698-G0119704.
LIFFE Connect for Futures: Project Summary: Apr. 19, 1999, G0119705-G0119717.
Functional Enhancements for LIFEE Connect for Futures Project, Apr. 12, 1999, G0119718-G0119724.

App. 413

Functional Enhancements for LIFEE Connect for Futures Project, Apr. 12, 1999, G0119725-G0119745.
Functional Enhancements for LIFEE Connect for Futures Project, Mar. 3, 1999.
Installation, Market Entry Test, and Technical Dress Rehearsal Summary, Feb. 23, 1999.
GL Trade Checklist-Installation Requirements for Futures, Jan. 1999, 00119795-G0119798.
Cahier de charges.doc, Feb. 9, 1999, G0111752-G0111758.
Keyboard example, Feb. 3, 2006, G007308-G007310.
GL Brochure, G0021652-21658.
GL Cost and Services, 00/00/1998, G0108876.
GL Win Summary (French), 6/00/1998, G0091004-G0091046.
Swiss Exchange SWX—TS User Manual, Dec. 31, 1998, DTX 2215, eS0032293-eS0032547.
Screen No. 100-Order Book & Order Entry 1 (Single View), eS060637-eS060639.
Globex User Guide, 01/00/97, DDX 633, DTX 633, eS069819-eS070081.
QuickTrade Document and Brochure, M21027-21031.
LIFEE Connect for Futures User Guide v4.5 6/00/1999, G0025751-25806.
GL Version 4.70 (French Version), Jan. 5, 2000, G0026505-26533.
GL Version 4.70 (English Version), Jan. 5, 2000, G0020593-20621.
GL Win and Related Software Manual, Sep. 11, 2000, 1) G0025251-25615.
GL Win and Related Software Manual, 2) G0025942-26267.
GL Win and Related Software Manual, 3) G010239-10610.

App. 414

GL Win et Logiciels complementaires (French), G0009495-9874.

Internal Product News doc on QuickTrade, G0020468-20471.

“Introducing the Company: GL Trade” product offerings and slide presentation (to Reuters), G0026534-26559.

GL Product Leaflet Re: Mosaic, G0022529-22530.

Thomson Financial leaflet, 09/00/2003, G0022445-22450.

LIFFE Connect for Futures leaflet, G0023885-23888.

TSE Japanese Document, pp. 4-15.

TSE Japanese Document, pp. 6-15.

Megumi Miyoshi, Japanese Patent Application No. 2001-564025, 4/18/200.

“Amazon.com Catapults Electronic Commerce to Next Level with Powerful New Features,” Amazon.com Press Release, Sep. 23, 1997, DTX1034, Dezmelyk000012-13.

Apple Advertisement, Scientific American, Sep. 1984, Scientific American Inc. NY, NY Dezmelyk000014-33.

Memo Re: Downloading the Terminal Program, Aug. 18, 2005.

“Specialist vs Saitori: Market-Making in New York and Tokyo”, Richard Lindsay and Ulrike Schaede, DTX 1170, 7-8/00/1992, Silverman000494-Silverman000506.

“Building for Excellence”, MINEX Brochure, DTX 1153, Silverman000330-Silverman000334.

Chicago Mercantile Exchange (CME) Brochure, DTX1163, Silverman000406- Silverman000407.

MEFF Renta Fija Manual, DTX 1165, 10/00/1997, Silverman000410-Silverman000473.

O'Hara and Oldfield, "The Microeconomics of Market Making", *Journal of Financial and Quantitative Analysis*, 12/00/86, DTX 1169 Silverman000478-Silverman000493.

B. Weber, "Information Technology in the Major International Financial Markets", Apr. 7, 1993, DX 79. Terminal Use Manual—Windows NT Version, Tokyo International Financial Futures Exchange (TIFFE), 0/0/1994, Silverman002552-Silverman002616, DTX 1226.

USPTO Press Release, "Electronic Patent Application Records Replace Paper Files at USPTO", DTX 2285, Sep. 19, 2007.

Memorandum Opinion and Order Re: '132 and '304 Claim Construction [425], Oct. 31, 2006.

Memorandum Opinion and Order Re: TT's Motion for Clarification [475], Feb. 21, 2007.

Memorandum Opinion and Order Re: Non-Infringement [708], Jun. 20, 2007.

Memorandum Opinion and Order Re: Motions for Reconsideration [875], Aug. 27, 2007.

Memorandum Opinion and Order Re: "Single Action" Ruling [963], Sep. 12, 2007.

Memorandum Opinion and Order Re: Preliminary Injunction [83], Feb. 9, 2005.

Memorandum Opinion and Order Re: eSpeed's Motion for Summary Judgment of Invalidity Denied [845], Aug. 21, 2007.

Memorandum Opinion and Order Re: TT's Motion to Preclude Prior Sale Defense Denied [873], Aug. 27, 2007.

Memorandum Opinion and Order Re: GL's Motion for Reconsideration Denied [994], Sep. 19, 2007.

Memorandum Opinion and Order Re: Priority Date [769], Jul. 12, 2007.

Memorandum Opinion and Order Re: Priority Date [1013], Sep. 25, 2007.

Memorandum Opinion and Order Re: Prior Public Use [835], Aug. 16, 2007.

Memorandum Opinion and Order Re: Defendant's Motion for Judgment as a Matter of Law on Indefiniteness [1141], Jan. 2, 2008.

Notification of Docket Entry Re: Defendants eSpeed's Motion for Judgment as a Matter of Law on Invalidity is denied [1140], Jan. 3, 2008.

Notification of Docket Entry Re: Defendant eSpeed's Motion for a New Trial is denied [1142], Jan. 3, 2008.

Memorandum Opinion and Order Re: Defendant's Motion for Judgment as a Matter of Law on Willfulness [1144], Jan. 3, 2008.

Deposition testimony of Hiroyuki Kida dated May 17, 2007 and May 18, 2007 with DDX 617-624, PDX 519-524 and PDX 531.

Trial testimony of Hiroyuki Kida dated Sep. 28, 2007 and Oct. 1, 2007 with DTX 617.

Deposition testimony of Atsushi Kawashima dated Nov. 21, 2005 with DDX 178-185.

Trial testimony of Atsushi Kawashima dated Sep. 26, 2007 with DTX 183.

Deposition testimony of Philip Carre dated Jun. 22, 2007, Sep. 6, 2007 & Sep. 13, 2007 with DDX 384-385; 473;494; 527;537-541; 592; 593A; 595-598; 605; 626; 629; 719-723; 728-732; 897-898; 896.

Deposition testimony of Michael Cartier dated May 9, 2007 with DDX 587-588; DDX 592-593A and PDX 498-500.

App. 417

Deposition testimony of Cristina Dobson dated May 18, 2007 with DDX 625-635; DDX 637; PDX 533 and PDX 535.

Deposition testimony of Nicholas Garrow dated Jun. 14, 2007 with DDX 116 and DDX 592.

Trial testimony of Nicholas Garrow (via expert witness) dated Oct. 2, 2007.

Deposition testimony of Michael Glista dated Feb. 20, 2007 with DDX 382-386.

Trial testimony of Michael Glista dated Sep. 24, 2007 and Sep. 25, 2007 with DTX 382-386; DTX 524; DTX 570; DTX 579; DTX 592; DTX 3020; DTX 3050; DTX 3057; DTX 3110; PTX 1993; PTX 2065; PTX 2092; PTX 2094.

Deposition testimony of Laurent Havard dated Apr. 24-26, 2007, May 12, 2007, Jun. 21, 2007 and Sep. 5, 2007 with DDX 506; DDX 508; DDX 517; DDX 539; DDX 551-568; DDX 570-573; DDX 575; DDX 603; PDX 462; PDX 464-483; PDX 767-769; PDX 771-774; PDX 875-877; PDX 882-888 and PDX 893.

Trial Testimony of Laurent Havard dated Sep. 21, 2007 with DTX 384; DTX 520; DTX 561-62; DTX 570; DTX 573; DTX 575; DTX 593; DTX 750-52; DTX 3011; DTX 3017-18; DTX 3050; PTX 575; PTX 2064; PTX 2074; PTX 2077; PTX 2079.

Deposition testimony of Jean Cedric Jollant dated Apr. 26, 2007 and Jun. 13, 2007 with DDX 384; DDX 517; DDX 520; DDX 551-568; DDX 575-577; PDX 465-483.

Trial testimony of Jean Cedric Jollant dated Sep. 20, 2007 with DTX 157; DTX 473; DTX 719; DTX 551-64; DTX 598; DTX 722; DTX 1903; DTX 3009-10; DTX 3014; DTX 3016-18 DTX 3020; DTX 3023; DTX 3025;

PTX 166; PTX 520; PTX 526; PTX 539; PTX 573; PTX 575; PTX 579; PTX 2065.

Deposition testimony of Marc Lorin dated Sep. 5, 2007 with DDX 385; DDX 721-722; DDX 730.

Deposition testimony of Christopher Malo dated May 23, 2007 with DDX 524.

Deposition testimony of Fred Mastro dated May 21, 2007 with DDX 638; PDX 538; PDX 540-543.

Trial testimony of Fred Mastro dated Sep. 25, 2007 with DTX 592.

Deposition testimony of William McHorris dated Apr. 10, 2007 with PDX 416-417.

Deposition testimony of Josephine Sheng dated Jun. 26, 2007 with DDX 520; DDX 522; DDX 536; DDX 575; PDX 493; PDX 683-683a; PDX 775.

Deposition testimony of Bruno Spada dated Apr. 30, 2007 and May 2, 2007 with DDX 384-385; DDX 519-21; DDX 537-38; DDX 579-580; DDX 522; DDX 538; PDX 493-495; PDX 519-522.

Trial testimony of Bruno Spada dated Sep. 24, 2007 with DTX 306; DTX 384; DTX 518-522; DTX 524; DTX 575; DTX 579-580; DTX 593; DTX 626; DTX 628; DTX 646; DTX 1899 DTX 2086; DTX 3020-3021; DTX 3058-3059; DTX 3061; DTX 3085; PTX 737; PTX 840; PTX 2083; PTX 2087; PTX 2099; PTX 2101.

Deposition testimony of Marcel Tchitchiama dated May 10, 2007-May 11, 2007 with DDX 156-157; DDX 168; DDX 384-85; DDX 538; DDX 592-93A; DDX 595-98; DDX 602-06; DDX 608-11 DTX 494; PDX 503; PDX 506; PDX 612.

Deposition testimony of Neil Treloar dated Jun. 19, 2007 with DDX 384; DDX 539-39A; DDX 724; DDX 726; PDX 492; PDX 750-752.

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Trial testimony of Neil Treloar dated Sep. 21, 2007 and Sep. 24, 2007 with DTX 2040-2042.

Trial testimony of Gerard Varjacques dated Sep. 28, 2007 with PTX 509-510 and PTX 513.

Deposition testimony of Amy Watson dated Jun. 12, 2007 with DDX 626A; DDX 700 and PDX 636.

Deposition testimony of Barbara Wattiez dated Jun. 16, 2007 with DDX 719-723.

Trial testimony of Barbara Wattiez dated Sep. 28, 2007 with DTX 592-593A; DTX 597-598; DTX 718-719; DTX 722.

Deposition testimony of Christopher Buist dated Jun. 22, 2006 with PDX 358-364 and DDX 283-284.

Deposition testimony of Walter Buist dated Jun. 23, 2006 with DDX 315; Pdx 310-315; PDX 365 and PDX 368-370.

Digital trading facility weekly operations meeting outline, DX 444, DTX 444, CM 006661-CM 006661, May 10, 1999.

Chart re DSM QA Test Plain—project plan in progress, DX 432, DTX 432, Nov. 4, 1998.

User interface design specification for WIT capital digital stock market, DX 433, DTX 433 CM 008441-CM 008478, Jan. 18, 1999.

Updated negotiations design to E. Lang from C. Mauro for review and approval prior to patent application, DX 434, CM 008410-CM 008414, DTX 434, Jan. 18, 1999.

Notes re final additions/revisions, DX 435, CM 007949-CM 007955, DTX 435, Apr. 2, 1999.

Position paper: On-line training and customer acquisition; WIT Capital DSM product launch and related schedule to E. Lang, DX 436, DTX 436, CM 006580-CM 006590, Feb. 22, 1999.

App. 420

Meeting outline, DX 428, CM 00750-CM 007501, DTX 428, Sep. 11, 1998.

Presentation re WIT Capital Digital stock market Phase 1 usability and customer response testing: Preliminary report of findings, DX 429, CM 007446-CM 007466, May 1, 2006.

WIT Capital limit order book to L. Forrest from C. Mauro, DX 425, CM 007382-CM 007411, DTX 425, Apr. 20, 1998.

User Interface Design for display options design, DX 426, CM 000249-CM 000287, DTX 426, July 8, 1998.

Letter from EPO to TT Re: Five Recently Filed European Patent Oppositions, Feb. 21, 2006.

Notice of Opposition to a European Patent EP 1319211 B1, ANITRA Medienprojekte GmbH, Jan. 13, 2006.

Notice of Opposition to a European Patent by Deutsche Horse AG, Jan. 12, 2006.

Notice of Opposition to a European Patent by EcoWare Ltd., Jan. 13, 2006.

Notice of Opposition to a European Patent by Rosenthal Collins Group LLC, Jan. 12, 2006.

Notice of Opposition to a European Patent by Tick-It GmbH, Jan. 13, 2006.

Declaration of Walter Buist, Exhibit 17, Apr. 26, 2007; with Faxed Signature Page.

Letter from J. Walaski to the EPO Re: Change of Address, Dec. 19, 2006.

A. Klein, WallStreet.com- Fat Cat Investing at the Click of a Mouse, Chapt. 14 "Finding Gold in Tribeca", 1998; Exhibit 16.

A. Klein, WallStreet.com- Fat Cat Investing at the Click of a Mouse, Chapt. 14-16, 18, 23, 1998; Exhibit 16 (Cont'd).

WIT Digital Stock Market, User Interface Rev. 9, Exhibit 15.

Opposition Trading Technologies, Inc. Application No. 01920183.9 EP 1319211B1, Exhibit 4 (Japanese and English Versions), 9/00/1997.

System for Buying and Selling Futures and Options Transaction Terminal Operational Guidelines, TSE Business Systems Dept., TSE647-995, eS062297-eS062380.

Letter from EPO to TT Re: Further European Patent Opposition, Feb. 23, 2006.

Letter from EPO to TT Re: Five Recently Filed European Patent Oppositions, Feb. 21, 2006.

Letter from EPO to TT Enclosing European Patent Oppositions, Jan. 25, 2006.

Opposition TT, EP 1 319 211 B1, Copy set 1, Annex One- Grounds of Opposition, Jan. 19, 2006.

Deposition Transcript of Atsushi Kawashima, Nov. 21, 2005, Opposition EP 1 319 211 B1 Exhibit 3.

The Application Program Interface (API) Reference Manual for LIFFE Connect, 9/00/1998, release 3.1, EP 1 319 211 B1 Exhibit 7A, eS0060146-eS0060237.

Deposition Transcript of Paul MacGregor, Nov. 1, 2005, Opposition EP 1 319 211 B1 Exhibit 9A.

APT Trading Procedures (ATOM Version) of LIFFE, Apr. 3, 2001, Opposition EP 1 319 211 B I Exhibit 9B.

APTplus Trading Procedures, Dec. 28, 1995, Opposition EP 1 319 211 B1 Exhibit 9D.

IRIS Investment Support Systems Window Ad, Opposition EP 1 319 211 B1 Exhibit 10.

Fig.2 Substitute Sheet (Rule 26), Opposition EP 1319 211 B1 Exhibit 13A.

U.S. Appl. No. 60/186,322, Opposition EP 1 319 211 B1 Exhibit 13B.

LIFFE's New Electronic Trading Platform for Futures, LIFFE 202-261, Opposition EP 1 319 211 B1 Exhibit 8D.

TIFFE Internet Article, "New On-Screen Trading Terminals", E2. System for Buying and Selling Futures and Options Transaction Terminal Operational Guidelines, TSE Business Systems Dept, TSE00647-810, eS0622977-eS062366, D1(2).

ORC Instructions for Use, Version 2.2.8., 1999.

Futures/Options Trading System Guidelines for Operating the Trading Terminals, TSE Business Systems Dept. TSE00628-643, eS062278-eS062293, D1(3).

Securities Industries News, "TT Upgrades Software Platform", Aug. 28, 2000 (D6).

Letter to EPO from Karl Barnfather Enclosing Notice of Opposition (form 2300.1) and Grounds of Opposition (Annex 1), Jan. 12, 2006.

Dow Jones & Reuters Factiva, "Firms Rush to Make LIFFE Connect Decision", Dec. 4, 1998, E6.

Dow Jones & Reuters Factiva, "Date Broadcasting Partners with Alltech Investment to Provide Customers with Online Trading", Feb. 25, 1999, E8.

Trading Pad Document (E3).

Japanese Document, TSE00609-627, Dec. 1, 2006 (E5), with Translation.

TT X-Trader Brochure, Dec. 1, 2006 (E7).

Letter to J. Walanski from EPO Re: Payment, Apr. 20, 2005.

Letter to J. Walanski from EPO Re: Decision to Grant TT Patent, Mar. 3, 2005.

German Document from Tick-It GmbH Filing New European Opposition, Jan. 14, 2006.

Faxed German Document from Tick-IT GmbH Filing New European Opposition, Jan. 13, 2006.

Annex A to TT's Reply Brief.
Annex B to TT's Reply Brief.
Memo Re: Futures/Options Trading System and Japanese Patent Application No. 2001-564025 (Japanese), Aug. 18, 2005.
Patsystems News Rd. Nov. 6, 2001.
Court's ruling on no prior sale.
Memorandum Opinion and Order Re: No prior use.
Memorandum Opinion and Order Re: Inequitable Conduct.
Memorandum Opinion and Order Re: Court Reaffirming Priority.
Non-final Office Action mailed Oct. 17, 2008 for U.S. Appl. No. 11/415,163.
Non-final Office Action mailed Mar. 17, 2009 for U.S. Appl. No. 11/585,905.
Non-final Office Action mailed Nov. 19, 2008 for U.S. Appl. No. 11/585,906.
Non-final Office Action mailed Oct. 6, 2008 for U.S. Appl. No. 11/585,907.
Re-exam Certificate for U.S. Patent No. 6,766,304, issued Mar. 31, 2009.
Re-exam Certificate for U.S. Patent No. 6,772,132, issued Mar. 31, 2009.
GL Trade, CAC and Stoxx Futures on MATIF NSC VF, User Information Notes, pp. 1-14, published by GL Trade, London, England, Mar. 15, 1999.
GL Trade, LIFFE Connect for Futures, User Guide, V4.50 Beta, pp. 1-24, published by GL Trade, London, England, Jan. 1999.
GL Trade, LIFFE Connect for Futures, User Guide, V4.50, pp. 1-39, published by GL Trade, London, England, Feb. 1999.

GL Trade, LIFFE Connect for Futures, User Guide, V4.50, pp. 1-39, published by GL Trade, London, England, Mar. 1999.

GL Trade, LIFFE Connect for Futures, User Guide, V4.51, pp. 1-57, published by GL Trade, London, England, Jun. 1999.

* cited by examiner

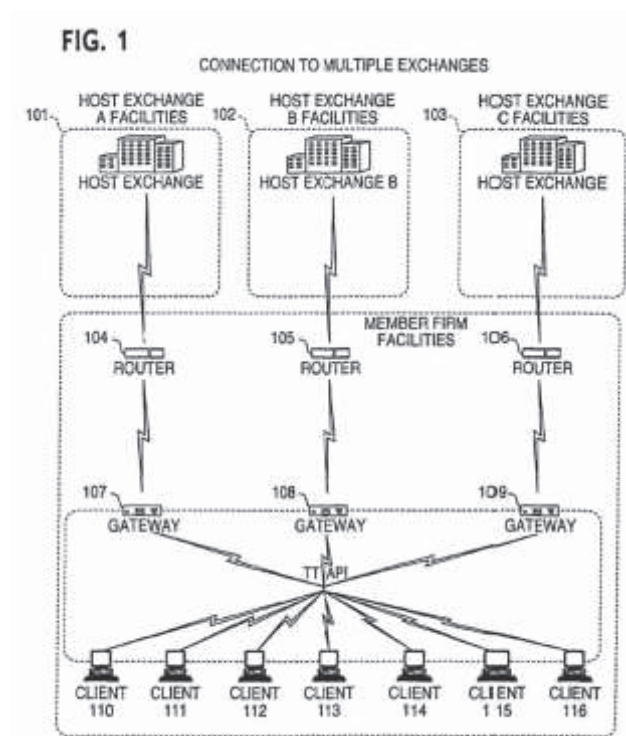


FIG. 2

	201	202	203	204	205				
)))				
	Contract	Depth	BidQty	BidPrc	AskPrc	AskQty	LastPrc	LastQty	Total
1	CDHO	•	785	7626	7627	21	7627	489	8230
2			626	7625	7629	815			
3			500	7624	7630	600			
4			500	7623	7631	2456			
5			200	7622	7632	800			

FIG. 3

E/W		10:48:44	BidQ	AskQ	Prc	LTQ
1009	L	3		104	99	
1010	R	5		24	98	
1011		720		33	97	
1012	X	10		115	96	
1013		0		32	95	
1014		10 1H		27	94	
		50 3H		63	93	
1007	S 0 W 24	1K 5H		45	92	
	S 0 W 7	CLR		28	91	
1015	X	10		20	90	10
1016		17		18	89	
1008	B 0 W 15	CXL	18		88	
	B 0 W 13	+ -	97		87	
1017		NET 0	30		86	
1018	B 0 W 17	NET REAL	43		85	
1019			110		84	
			23		83	
1021			31		82	
			125		81	
			21			

1001 1002 1003 1004 1005 1006

1020

FIG. 4

SYCOM FGBL DEC99						[-] [] [X]	
E/W	10:48:44		BidQ	AskQ	Prc	LTQ	
	L	3		104	99		
	R	5		24	98		
	720			33	97		
	X	10		115	96		
	0			32	95		
	10	1H		27	94		
	50	3H		63	93	10	} 1101
S 10 W 14	1K	5H		43	92		
	CLR		43		91		
	X	10	125		90		
	17	▼	97		89		
B 0 W 15	CXL		18		88		
B 0 W 13	+	-	97		87		
	NET 0		30		86		
			43		85		
B 0 W 17	NET REAL		110		84		
			23		83		
			31		82		
			125		81		
			21				

FIG. 5

SYCOM FGBL DEC99						-	□	×
E/W	10:48:44		BidQ	AskQ	Prc	LTQ		
	L	3		104	99			
	R	5		24	98			
	720			33	97			
	×	10		115	96			
	0			32	95			
	10	1H		27	94			
	50	3H		63	93			
S 0 W 24	1K	5H		45	92			
S 0 W 7	CLR			28	91			
	×	10		20	90	10		
	17	▼		18	89			
B 0 W 15	CXL		18		88			
B 0 W 13	+	-	97		87			
	NET 0		30		86			
			43		85			
B 0 W 17	NET REAL		110		84			
			23		83			
			31		82			
			125		81			
			21					

1206

1205

1204

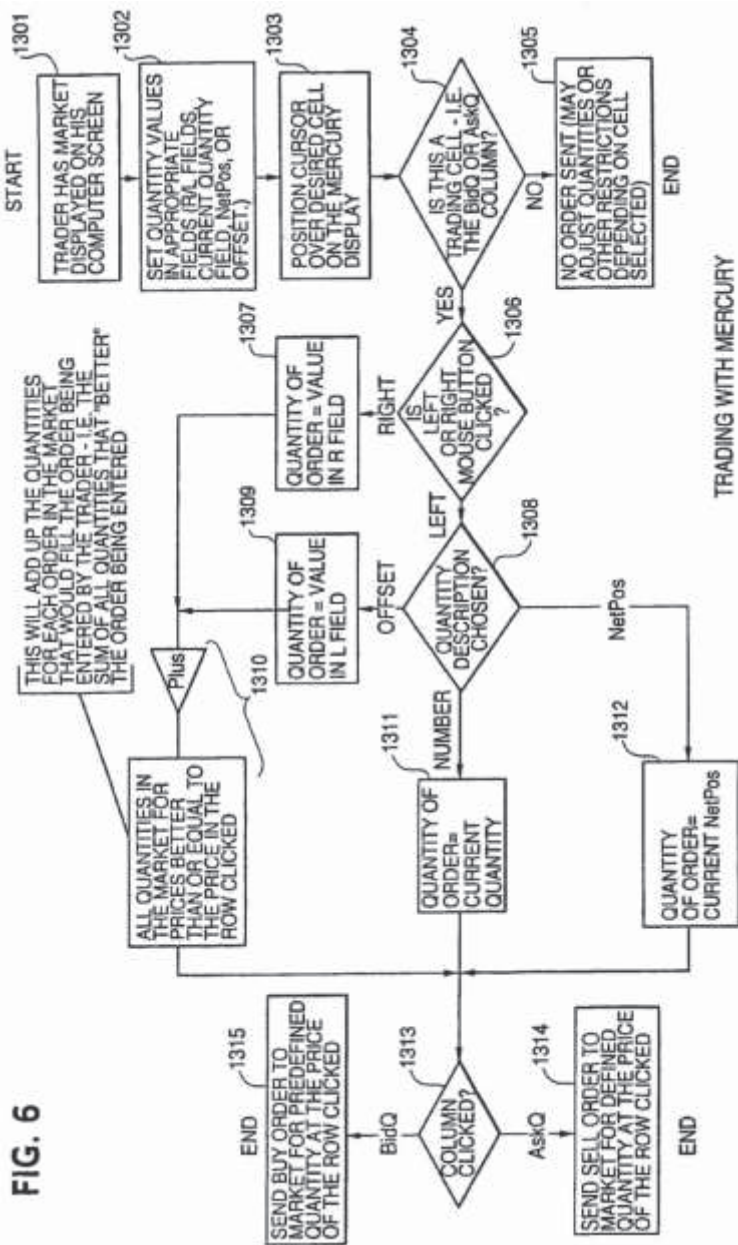
1208

1201

1202

1203

1207



**CLICK BASED TRADING WITH INTUITIVE
GRID DISPLAY OF MARKET DEPTH**

PRIORITY

The present application is a continuation of Ser. No. 11/415,163, filed May 2, 2006, which is a continuation of Ser. No. 10/237,131, filed Sep. 9, 2002, now abandoned which is a continuation of Ser. No. 09/590,692, filed Jun. 9, 2000, which is now U.S. Pat. No. 6,772,132, issued Aug. 3, 2004, which claims priority to a U.S. Provisional Patent Application 60/186,322, entitled "Market Depth Display Click Based Trading and Mercury Display" filed Mar. 2, 2000, the contents of which are incorporated herein by reference.

FIELD OF INVENTION

The present invention is directed to the electronic trading of commodities. Specifically, the invention provides a trader with a versatile and efficient tool for executing trades. It facilitates the display of and the rapid placement of trade orders within the market trading depth of a commodity, where a commodity includes anything that can be traded with quantities and/or prices.

BACKGROUND OF THE INVENTION

At least 60 exchanges throughout the world utilize electronic trading in varying degrees to trade stocks, bonds, futures, options and other products. These electronic exchanges are based on three components: mainframe computers (host), communications servers, and the exchange participants' computers (client). The host forms the electronic heart of the fully

computerized electronic trading system. The system's operations cover order-matching, maintaining order books and positions, price information, and managing and updating the database for the online trading day as well as nightly batch runs. The host is also equipped with external interfaces that maintain uninterrupted online contact to quote vendors and other price information systems.

Traders can link to the host through three types of structures: high speed data lines, highspeed communications servers and the Internet. High speed data lines establish direct connections between the client and the host. Another connection can be established by configuring high speed networks or communications servers at strategic access points worldwide in locations where traders physically are located. Data is transmitted in both directions between traders and exchanges via dedicated high speed communication lines. Most exchange participants install two lines between the exchange and the client site or between the communication server and the client site as a safety measure against potential failures. An exchange's internal computer system is also often installed with backups as a redundant measure to secure system availability. The third connection utilizes the Internet. Here, the exchange and the traders communicate back and forth through high speed data lines, which are connected to the Internet. This allows traders to be located anywhere they can establish a connection to the Internet.

Irrespective of the way in which a connection is established, the exchange participants' computers allow

traders to participate in the market. They use software that creates specialized interactive trading screens on the traders' desktops. The trading screens enable traders to enter and execute orders, obtain market quotes, and monitor positions. The range and quality of features available to traders on their screens varies according to the specific software application being run. The installation of open interfaces in the development of an exchange's electronic strategy means users can choose, depending on their trading style and internal requirements, the means by which they will access the exchange.

The world's stock, bond, futures and options exchanges have volatile products with prices that move rapidly. To profit in these markets, traders must be able to react quickly. A skilled trader with the quickest software, the fastest communications, and the most sophisticated analytics can significantly improve his own or his firm's bottom line. The slightest speed advantage can generate significant returns in a fast moving market. In today's securities markets, a trader lacking a technologically advanced interface is at a severe competitive disadvantage.

Irrespective of what interface a trader uses to enter orders in the market, each market supplies and requires the same information to and from every trader. The bids and asks in the market make up the market data and everyone logged on to trade can receive this information if the exchange provides it. Similarly, every exchange requires that certain information be included in each order. For example, traders must supply information like the name of the commodity, quantity, restrictions, price and multiple

other variables. Without all of this information, the market will not accept the order. This input and output of information is the same for every trader.

With these variables being constant, a competitive speed advantage must come from other aspects of the trading cycle. When analyzing the time it takes to place a trade order for a given commodity, various steps contribute in different amounts to the total time required. Approximately 8% of the total time it takes to enter an order elapses between the moment the host generates the price for the commodity and the moment the client receives the price. The time it takes for the client application to display the price to the trader amounts to approximately 4%. The time it takes for a trade order to be transmitted to the host amounts to approximately 8%. The remainder of the total time it takes to place an order, approximately 80%, is attributable to the time required for the trader to read the prices displayed and to enter a trade order. The present invention provides a significant advantage during the slowest portion of the trading cycle—while the trader manually enters his order. Traders recognize that the value of time savings in this portion may amount to millions of dollars annually.

In existing systems, multiple elements of an order must be entered prior to an order being sent to market, which is time consuming for the trader. Such elements include the commodity symbol, the desired price, the quantity and whether a buy or a sell order is desired. The more time a trader takes entering an order, the more likely the price on which he wanted to

bid or offer will change or not be available in the market. The market is fluid as many traders are sending orders to the market simultaneously. In fact, successful markets strive to have such a high volume of trading that any trader who wishes to enter an order will find a match and have the order filled quickly, if not immediately. In such liquid markets, the prices of the commodities fluctuate rapidly. On a trading screen, this results in rapid changes in the price and quantity fields within the market grid. If a trader intends to enter an order at a particular price, but misses the price because the market prices moved before he could enter the order, he may lose hundreds, thousands, even millions of dollars. The faster a trader can trade, the less likely it will be that he will miss his price and the more likely he will make money.

SUMMARY OF THE INVENTION

The inventors have developed the present invention which overcomes the drawbacks of the existing trading systems and dramatically reduces the time it takes for a trader to place a trade when electronically trading on an exchange. This, in turn, increases the likelihood that the trader will have orders filled at desirable prices and quantities.

The “Mercury” display and trading method of the present invention ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently.

Specifically, the present invention is directed to a graphical user interface for displaying the market depth of a commodity traded in a market, including a dynamic display for a plurality of bids and for a plurality of asks in the market for the commodity and a static display of prices corresponding to the plurality of bids and asks. In this embodiment the pluralities of bids and asks are dynamically displayed in alignment with the prices corresponding thereto. Also described herein is a method and system for placing trade orders using such displays.

These embodiments, and others described in greater detail herein, provide the trader with improved efficiency and versatility in placing, and thus executing, trade orders for commodities in an electronic exchange. Other features and advantages of the present invention will become apparent to those skilled in the art from the following detailed description. It should be understood, however, that the detailed description and specific examples, while indicating preferred embodiments of the present invention, are given by way of illustration and not limitation. Many changes and modifications within the scope of the present invention may be made without departing from the spirit thereof, and the invention includes all such modifications.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates the network connections between multiple exchanges and client sites;

FIG. 2 illustrates screen display showing the inside market and the market depth of a given commodity being traded;

FIG. 3 illustrates the Mercury display of the present invention;

FIG. 4 illustrates the Mercury display at a later time showing the movement of values when compared to FIG. 3;

FIG. 5 illustrates a Mercury display with parameters set in order to exemplify the Mercury trading method; and

FIG. 6 is a flowchart illustrating the process for Mercury display and trading.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As described with reference to the accompanying figures, the present invention provides a display and trading method to ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to place trade orders quickly and efficiently. A commodity's market depth is the current bid and ask prices and quantities in the market. The display and trading method of the invention increase the likelihood that the trader will be able to execute orders at desirable prices and quantities.

In the preferred embodiment, the present invention is implemented on a computer or electronic terminal. The computer is able to communicate either directly or indirectly (using intermediate devices) with the exchange to receive and transmit market, commodity, and trading order information. It is able to interact with the trader and to generate contents and

characteristics of a trade order to be sent to the exchange. It is envisioned that the system of the present invention can be implemented on any existing or future terminal or device with the processing capability to perform the functions described herein. The scope of the present invention is not limited by the type of terminal or device used. Further, the specification refers to a single click of a mouse as a means for user input and interaction with the terminal display as an example of a single action of the user. While this describes a preferred mode of interaction, the scope of the present invention is not limited to the use of a mouse as the input device or to the click of a mouse button as the user's single action. Rather, any action by a user within a short period of time, whether comprising one or more clicks of a mouse button or other input device, is considered a single action of the user for the purposes of the present invention.

The system can be configured to allow for trading in a single or in multiple exchanges simultaneously. Connection of the system of the present invention with multiple exchanges is illustrated in FIG. 1. This figure shows multiple host exchanges **101-103** connected through routers **104-106** to gateways **107-109**. Multiple client terminals **110-116** for use as trading stations can then trade in the multiple exchanges through their connection to the gateways **107-109**. When the system is configured to receive data from multiple exchanges, then the preferred implementation is to translate the data from various exchanges into a simple format. This "translation" function is described below with reference to FIG. 1. An applications program interface ("TT API" as depicted in the figure) translates the incoming data formats from the

different exchanges to a simple preferred data format. This translation function may be disposed anywhere in the network, for example, at the gateway server, at the individual workstations or at both. In addition, the storage at gateway servers and at the client workstations, and/or other external storage cache historical data such as order books which list the client's active orders in the market; that is, those orders that have neither been filled nor cancelled. Information from different exchanges can be displayed at one or in multiple windows at the client workstation. Accordingly, while reference is made through the remainder of the specification to a single exchange to which a trading terminal is connected, the scope of the invention includes the ability to trade, in accordance with the trading methods described herein, in multiple exchanges using a single trading terminal.

The preferred embodiments of the present invention include the display of "Market Depth" and allow traders to view the market depth of a commodity and to execute trades within the market depth with a single click of a computer mouse button. Market Depth represents the order book with the current bid and ask prices and quantities in the market. In other words, Market Depth is each bid and ask that was entered into the market, subject to the limits noted below, in addition to the inside market. For a commodity being traded, the "inside market" is the highest bid price and the lowest ask price.

The exchange sends the price, order and fill information to each trader on the exchange. The present invention processes this information and maps it

through simple algorithms and mapping tables to positions in a theoretical grid program or any other comparable mapping technique known to those skilled in the art. The present invention is not limited by the method used to map the data to the screen display.

How far into the market depth the present invention can display depends on how much of the market depth the exchange provides. Some exchanges supply an infinite market depth, while others provide no market depth or only a few orders away from the inside market. The user of the present invention can also chose how far into the market depth to display on his screen.

FIG, 2 illustrates a screen display of an invention described in a commonly owned co-pending application entitled “Click Based Trading with Market Depth Display” Ser. No. 09/589, 751, filed on Jun. 9, 2000, the contents of which are incorporated herein by reference, This display shows the inside market and the market depth of a given commodity being traded. Row 1 represents the “inside market” for the commodity being traded which is the best (highest) bid price and quantity and the best (lowest) ask price and quantity. Rows 2-5 represent the “market depth” for the commodity being traded. In the preferred embodiment of the present invention, the display of market depth (rows 2-5) lists the available next-best bids, in column 203, and asks, in column 204. The working bid and ask quantity for each price level is also displayed in columns 202 and 205 respectively (inside market—row 1). Prices and quantities for the inside market and market depth update dynamically on a real time basis as such information is relayed from the market.

In the screen display shown in FIG, 2, the commodity (contract) being traded is represented in row 1 by the character string "CDHO", The Depth column 208 will inform the trader of a status by displaying different colors. Yellow indicates that the program application is waiting for data. Red indicates that the Market Depth has failed to receive the data from the server and has "timed out." Green indicates that the data has just been updated. The other column headings in this and all of the other figures, are defined as follows. BidQty (Bid Quantity): the quantity for each working bid, BidPrc (Bid Price): the price for each working bid, AskPrc (Ask Price): the price for each working ask, AskQty (Ask Quantity): the quantity for each working ask, LastPrc (Last Price): the price for the last bid and ask that were matched in the market and LastQty (Last Quantity): the quantity traded at the last price. Total represents the total quantity traded of the given commodity,

The configuration of the screen display it self informs the user in a more convenient and efficient manner than existing systems. Traders gain a significant advantage by seeing the market depth because they can see trends in the orders in the market. The market depth display shows the trader the interest the market has in a given commodity at different price levels. If a large amount of bids or asks are in the market near the trader's position, he may feel he should sell or buy before the inside market reaches the morass of orders. A lack of orders above or below the inside market might prompt a trader to enter orders near the inside market. Without seeing the market depth, no such strategies could be utilized. Having the dynamic market depth, including the bid and ask

quantities and prices of a traded commodity aligned with and displayed below the current inside market of the commodity conveys the information to the user in a more intuitive and easily understandable manner. Trends in the trading of the commodity and other relevant characteristics are more easily identifiable by the user through the use of the present invention.

Various abbreviations are used in the screen displays, and specifically, in the column headings of the screen displays reproduced herein. Some abbreviations have been discussed above. A list of common abbreviations and their meanings is provided in Table 1.

TABLE I

<u>Abbreviations</u>	
COLUMN	DESCRIPTION
Month	Expiration Month/Year
Bid Mbr(1)	Bid Member ID
WrkBuys(2)	Working Buys for entire Group ID
BidQty	Bid Quantity
ThrshBid(6)	Threshold Bid Price
BidPrc	Bid Price
Bid Qty Accum	Accumulated Bid Quantity
BidPrc Avg	Bid Price Average
AskPrc Avg	Ask Price Average
AskQty Accum	Accumulated Ask Quantity
AskPrc	Ask Price
ThrshAsk(6)	Threshold Ask Price
AskQty	Ask Quantity
WrkSells(2)	Working Sells for entire Group ID

App. 442

Ask Mbr(1)	Ask Member ID
NetPos	Net Position
FFNetPos	Fast Fill Net Position
LastPrc	Last Price
LastQty	Last Quantity
Total	Total Traded Quantity
High	High Price
Low	Low Price
Open	Opening Price
Close	Closing Price
Cling	Last Price-Last Close
TheoPrc	Theoretical Price
TheoBid	Theoretical Bid Price
TheoAsk	Theoretical Ask Price
QAct	Quote Action (Sends individual quotes)
BQQ	Test Bid Quote Quantity
BQP	Test Bid Quote Price
Mkt BQQ	Market Bid Quote Quantity
Mkt BQP	Market Bid Quote Price
Quote	Checkbox activates/deactivates contract for quoting
Mkt AQQ	Market Ask Quote Quantity
Mkt AQP	Market Ask Quote Price
AQP	Ask Quote Price
AQQ	Ask Quote Quantity
Imp BidQty(5)	Implied Bid Quantity
Imp BidPrc(5)	Implied Bid Price
Imp AskQty(5)	Implied Ask Quantity
Imp AskPrc(5)	Implied Ask Price
Gamma(3)	Change in Delta given 1 pt change in underlying
Delta(3)	Change in price given 1 pt change in underlying

Vola(3)	Percent volatility
Vega(3)	Price change given 1% change in Vola
Rho(3)	Price change given 1% change in interest rate
Theta(3)	Price change for every day that elapses
Click Trd	Activate/deactivate click trading by contract
S (Status)	Auction, Closed, FastMkt, Not Tradable, Pre-trading, Tradable, S = post-trading
Expiry	Expiration Month/Year

As described herein, the display and trading method of the present invention provide the user with certain advantages over systems in which a display of market depth, as shown in FIG. 2, is used. The Mercury display and trading method of the present invention ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently. An example of such a Mercury display is illustrated in the screen display of FIG. 3.

The display of market depth and the manner in which traders trade within the market depth can be effected in different manners, which many traders will find materially better, faster and more accurate. In addition, some traders may find the display of market depth to be difficult to follow. In the display shown in FIG. 2, the market depth is displayed vertically so that both Bid and Ask prices descend the grid. The

Bid prices descend the market grid as the prices decrease. Ask prices also descend the market grid as these prices actually increase. This combination may be considered counterintuitive and difficult to follow by some traders.

The Mercury display overcomes this problem in an innovative and logical manner. Mercury also provides an order entry system, market grid, fill window and summary of market orders in one simple window. Such a condensed display materially simplifies the trading system by entering and tracking trades in an extremely efficient manner. Mercury displays market depth in a logical, vertical fashion or horizontally or at some other convenient angle or configuration. A vertical field is shown in the figures and described for convenience, but the field could be horizontal or at an angle. In turn, Mercury further increases the speed of trading and the likelihood of entering orders at desired prices with desired quantities. In the preferred embodiment of the invention, the Mercury display is a static vertical column of prices with the bid and ask quantities displayed in vertical columns to the side of the price column and aligned with the corresponding bid and ask prices. An example of this display is shown in FIG. 3.

Bid quantities are in the column **1003** labeled BidQ and ask quantities are in column **1004** labeled AskQ. The representative ticks from prices for the given commodity are shown in column **1005**. The column does not list the whole prices (e.g. 95.89), but rather, just the last two digits (e.g. 89). In the example shown, the inside market, cells **1020**, is 18 (best bid

quantity) at 89 (best bid price) and 20 (best ask quantity) at 90 (best ask price). In the preferred embodiment of the invention, these three columns are shown in different colors so that the trader can quickly distinguish between them.

The values in the price column are static; that is, they do not normally change positions unless a re-centering command is received (discussed in detail later). The values in the Bid and Ask columns however, are dynamic; that is, they move up and down (in the vertical example) to reflect the market depth for the given commodity. The LTQ column **1006** shows the last traded quantity of the commodity. The relative position of the quantity value with respect to the Price values reflects the price at which that quantity was traded. Column **1001** labeled E/W (entered/working) displays the current status of the trader's orders. The status of each order is displayed in the price row where it was entered. For example, in cells **1007**, the number next to S indicates the number of the trader's ordered lots that have been sold at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in the market, but have not been filled—i.e. the system is working on filling the order. Blanks in this column indicate that orders are entered or working at that price. In cells **1008**, the number next to B indicates the number of the trader's ordered lots that have been bought at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in the market, but have not been filled—i.e. the system is working on filling the order.

Various parameters are set and information is provided in column **1002**. For example, “10:48:44” in cell **1009** shows the actual time of day. The L and R fields in cell **1010** indicate a quantity value, which may be added to the order quantity entered. This process is explained below with respect to trading under Mercury. Below the L and R fields, in cell **1011**, a number appears which represents the current market volume. This is the number of lots that have been traded for the chosen contract. Cell **1012**, “X 10”, displays the Net Quantity, the current position of the trader on the chosen contract. The number “10” represents the trader’s buys minus sells. Cell **1013** is the “Current Quantity”; this field represents the quantity for the next order that the trader will send to market. This can be adjusted with right and left clicks (up and down) or by clicking the buttons which appear below the Current Quantity in cells **1014**. These buttons increase the current quantity by the indicated amount; for example, “10” will increase it by 10; “1H” will increase it by 100; “1K” will increase it by 1000. Cell **1015** is the Clear button; clicking this button will clear the Current Quantity field. Cell **1016** is the Quantity Description; this is a pull down menu allowing the trader to choose from three Quantity Descriptions. The pull down menu is displayed when the arrow button in the window is clicked. The window includes NetPos, Offset and a field allowing the trader to enter numbers. Placing a number in this field will set a default buy or sell quantity. Choosing “Offset” in this field will enable the L/R buttons of cell **1010**. Choosing “NetPos” in this field will set the current Net Quantity (trader’s net position) as the trader’s quantity for his next trade. Cell **1017** are +/- buttons;

these buttons will alter the size of the screen—either larger (+) or smaller (-). Cell **1018** is used to invoke Net 0; clicking this button will reset the Net Quantity (cell **1011**) to zero. Cell **1019** is used to invoke Net Real; clicking this button will reset the Net Quantity (cell **1011**) to its actual position.

The inside market and market depth ascend and descend as prices in the market increase and decrease. For example, FIG. 4 shows a screen displaying the same market as that of FIG. 3 but at a later interval where the inside market, cells **1101**, has risen three ticks. Here, the inside market for the commodity is 43 (best bid quantity) at 92 (best bid price) and 63 (best ask quantity) at 93 (best ask price). In comparing FIGS. 3 and 4, it can be seen that the price column remained static, but the corresponding bids and asks rose up the price column. Market Depth similarly ascends and descends the price column, leaving a vertical history of the market.

As the market ascends or descends the price column, the inside market might go above or below the price column displayed on a trader's screen. Usually a trader will want to be able to see the inside market to assess future trades. The system of the present invention addresses this problem with a one click centering feature. With a single click at any point within the gray area, **1021**, below the "Net Real" button, the system will re-center the inside market on the trader's screen. Also, when using a three-button mouse, a click of the middle mouse button, irrespective of the location of the mouse pointer, will re-center the inside market on the trader's screen.

The same information and features can be displayed and enabled in a horizontal fashion. Just as the market ascends and descends the vertical Mercury display shown in FIGS. 3 and 4, the market will move left and right in the horizontal Mercury display. The same data and the same information gleaned from the dynamical display of the data is provided. It is envisioned that other orientations can be used to dynamically display the data and such orientations are intended to come within the scope of the present invention.

Next, trading commodities, and specifically, the placement of trade orders using the Mercury display is described. Using the Mercury display and trading method, a trader would first designate the desired commodity and, if applicable, the default quantities. Then he can trade with single clicks of the right or left mouse button. The following equations are used by the system to generate trade orders and to determine the quantity and price to be associated with the trade order. The following abbreviations are used in these formulas: P =Price value of row clicked, R=Value in R field, L=Value in L field, Q =Current Quantity, Q_a =Total of all quantities in AskQ column at an equal or better price than P, Q_b =Total of all quantities in BidQ column at an equal or better price than P, N=Current Net Position, Bo=Buy order sent to market and So=Sell order sent to market.

Any order entered using right mouse button

$$Bo=(Q_a+R)P \quad (\text{Eq. 1}) \text{ If BidQ field clicked.}$$

$$So=(Q_b+R)P \quad (\text{Eq. 2}) \text{ If AskQ field clicked.}$$

Orders Entered Using the Left Mouse Button

If “Offset” mode chosen in Quantity Description field then:

$$Bo=(Q_a+L)P \quad (\text{Eq. 3}) \text{ If BidQ field clicked.}$$

$$So=(Q_b+L)P \quad (\text{Eq. 4}) \text{ If AskQ field clicked.}$$

If “number” mode chosen in Quantity Description field then:

$$Bo=QP \quad (\text{Eq. 5})$$

$$So=QP \quad (\text{Eq. 6})$$

If “NetPos” mode chosen in Quantity Description field then:

$$Bo=NP \quad (\text{Eq. 7})$$

$$So=NP \quad (\text{Eq. 8})$$

Orders can also be sent to market for quantities that vary according to the quantities available in the market; quantities preset by the trader; and which mouse button the trader clicks. Using this feature, a trader can buy or sell all of the bids or asks in the market at or better than a chosen price with one click. The trader could also add or subtract a preset quantity from the quantities outstanding in the market. If the trader clicks in a trading cell—i.e. in the BidQ or AskQ column, he will enter an order in the market. The parameters of the order depend on which mouse button he clicks and what preset values he set.

Using the screen display and values from FIG. 5, the placement of trade orders using the Mercury display and trading method is now described using examples. A left click on the **18** in the BidQ column **1201** will send an order to market to sell 17 lots (quantity # chosen on the Quantity Description pull down menu

cell **1204**) of the commodity at a price of 89 (the corresponding price in the Prc column **1203**). Similarly, a left click on the **20** in the AskQ column **1202** will send an order to market to buy 17 lots at a price of 90.

Using the right mouse button, an order would be sent to market at the price that corresponds to the row clicked for the total quantity of orders in the market that equal or better the price in that row plus the quantity in the R field **1205**. Thus, a right click in the AskQ column **1202** in the 87 price row will send a sell order to market at a price of 87 and a quantity of 150. 150 is the sum of all the quantities 30, 97, 18 and 5. 30, 97 and 18 are all of the quantities in the market that would meet or better the trader's sell order price of 87. These quantities are displayed in the BidQ column **1201** because this column represents the orders outstanding in the market to purchase the commodity at each corresponding price. The quantity 5 is the quantity pre-set in the R field **1205**.

Similarly, a right click in the BidQ column **1201** at the same price level of 87 would send a buy limit order to market for a quantity of 5 at a price of 87. The quantity is determined in the same manner as above. In this example, though, there are no orders in the market that equal or better the chosen price—there are no quantities in the AskQ column **1202** that equal or better this price. Therefore, the sum of the equal or better quantities is zero (“0”). The total order entered by the trader will be the value in the R field, which is 5.

An order entered with the left mouse button and the “Offset” option chosen in the quantity description field **1204** will be calculated in the same way as above,

but the quantity in the L field **1206** will be added instead of the quantity in the R field **1205**. Thus, a left click in the BidQ column **1201** in the 92 price row will send a buy order to market at a price of 92 and a quantity of 96. 96 is the sum of all the quantities 45, 28, 20 and 3.45, 28 and 20 are all quantities in the market that would meet or better the trader's buy order price of 92. These quantities are displayed in the AskQ column **1202** because this column represents the orders outstanding in the market to sell the commodity at each corresponding price. The quantity 3 is the quantity pre-set in the L field **1206**.

The values in the L or R fields may be negative numbers. This would effectively decrease the total quantity sent to market. In other words, in the example of a right click in the AskQ column **1202** in the 87 price row, if the R field was -5, the total quantity sent to market would be 140 ($30+97+18+(-5)$).

If a trader chose the "NetPos" option in the quantity description field **1204**, a right click would still work as explained above. A left click would enter an order with a price corresponding to the price row clicked and a quantity equal to the current Net position of the trader. The Net position of the trader is the trader's current position on the chosen contract. In other words, if the trader has bought 10 more contracts than he has sold, this value would be 10. Net-Pos would not affect the quantity of an order sent with a right click.

If the trader chose a number value in the quantity description, a left click would send an order to market for the current quantity chosen by the trader. The default value of the current quantity will be the number

entered in the quantity description field, but it could be changed by adjusting the figure in the current quantity field **1204**.

This embodiment of the invention also allows a trader to delete all of his working trades with a single click of either the right or left mouse button anywhere in the last traded quantity (LTQ) column **1207**. This allows a trader to exit the market immediately. Traders will use this feature when they are losing money and want to stop the losses from piling up. Traders may also use this feature to quickly exit the market upon making a desired profit. The invention also allows a trader to delete all of his orders from the market at a particular price level. A click with either mouse button in the Entered/Working (E/W) column **1208** will delete all working orders in the cell that was clicked. Thus, if a trader believes that previously sent orders at a particular price that have not been filled would be poor trades, he can delete these orders with a single click.

The process for placing trade orders using the Mercury display and trading method of the present invention as described above is shown in the flowchart of FIG. 6. First, in step **1301**, the trader has the Mercury display on the trading terminal screen showing the market for a given commodity. In step **1302**, the parameters are set in the appropriate fields, such as the L and R fields and the Current Quantity, NetPos or Offset fields from the pull down menu. In step **1303**, the mouse pointer is positioned and clicked over a cell in the Mercury display by the trader. In step **1304**, the system determines whether the cell clicked is a tradeable cell (i.e. in the AskQ column or

BidQ column). If not, then in step **1305**, no trade order is created or sent and, rather, other quantities are adjusted or functions are performed based upon the cell selected. Otherwise, in step **1306**, the system determines whether it was the left or the right button of the mouse that was clicked. If it was the right, then in step **1307**, the system will use the quantity in the R field when it determines the total quantity of the order in step **1310**. If the left button was clicked, then in step **1308**, the system determines which quantity description was chosen: Offset, NetPos or an actual number.

If Offset was chosen, then the system, in step **1309**, will use the quantity in the L field when it determines the total quantity of the order in step **1310**. If NetPos was chosen, then the system, in step **1312**, will determine that the total quantity for the trade order will be current NetPos value, i.e. the net position of the trader in the given commodity. If an actual number was used as the quantity description, then, in step **1311**, the system will determine that the total quantity for the trade order will be the current quantity entered. In step **1310**, the system will determine that the total quantity for the trade order will be the value of the R field (if step **1307** was taken) or the value of the L field (if step **1309** was taken) plus all quantities in the market for prices better than or equal to the price in the row clicked. This will add up the quantities for each order in the market that will fill the order being entered by the trader (plus the L or R value).

After either steps **1310**, **1311** or **1312**, the system, in step **1313**, determines which column was clicked,

BidQ or AskQ. If AskQ was clicked, then, in step **1314**, the system sends a sell limit order to the market at the price corresponding to the row for the total quantity as already determined. If BidQ was clicked, then, in step **1315**, the system sends a buy limit order to the market at the price corresponding to the row for the total quantity as already determined.

It should be understood that the above description of the invention and specific examples, while indicating preferred embodiments of the present invention, are given by way of illustration and not limitation. Many changes and modifications within the scope of the present invention may be made without departing from the spirit thereof, and the present invention includes all such changes and modifications.

We claim:

1. A method of canceling an order entered for a commodity at an electronic exchange, the method comprising:

receiving data relating to the commodity from the electronic exchange, the data comprising an inside market having a current highest bid price and a current lowest ask price available for the commodity;

setting a trade order parameter;

dynamically displaying by a computing device a first indicator at a first area corresponding to a first price level along a static price axis, the first indicator being associated with the current highest bid price for the commodity;

dynamically displaying by the computing device a second indicator at a second area corresponding to a second price level along the static price axis, the second indicator being associated with the current lowest ask price for the commodity;

updating the dynamic display of the first and second indicators such that at least one of the first and second indicators is moved relative to the static price axis to a different area corresponding to a different price level along the static price axis in response to the receipt of new data representing a new inside market;

displaying by the computing device an order entry region comprising a plurality of areas, each area corresponding to a price level along the static price axis and each area being selectable by a user input device so as to receive a command to send an order message based on the trade order parameter and the price level that corresponds with the selected area to the electronic exchange;

displaying by the computing device an entered order indicator at a location corresponding to a particular price level along the static price axis, the entered order indicator being associated with an order entered at the electronic exchange at the particular price level; and

receiving a single action command that selects the location associated with the entered order indicator so as to cancel the order at the electronic exchange.

2.The method of claim **1**, wherein the single action command consists of a single click of the user input device.

3.The method of claim **1**, wherein the single action command consists of a double click of the user input device.

4.The method of claim **1**, further comprising:

displaying an entered order region for displaying the entered order indicator, the entered order region comprising a plurality of locations, such that each location corresponds to a price level along the static price axis.

5.The method of claim **1**, wherein the entered order indicator displays a current status of the order at the electronic exchange.

6.The method of claim **5**, wherein displaying the current status comprises dynamically displaying a number of ordered lots of the commodity that have been bought or sold since the order was placed at the electronic exchange.

7.The method of claim **5**, wherein displaying the current status comprises dynamically displaying a number of ordered lots of the commodity that are currently working at the particular price level since the order was placed at the electronic exchange.

8.The method of claim **5**, wherein price levels along the static price axis are displayed.

9.The method of claim **1**, wherein the static price axis is positioned vertically, horizontally, or at some other angle.

- 10.** The method of claim **1**, further comprising:
receiving a command to enter the order at the electronic exchange, the command resulting from selecting a particular area in the order entry region corresponding to a desired price level as part of a single action of a user with a pointer of the user input device positioned over the particular area to both set an order price parameter for the order based on the desired price level and send the order to the electronic exchange.
- 11.** The method of claim **1**, further comprising:
receiving a re-positioning instruction causing the price levels to change positions along the static price axis.
- 12.** The method of claim **11**, wherein the re-positioning instruction is a re-centering command.
- 13.** The method of claim **12**, wherein as a result of the first and second indicators moving away from the center portion of the static price axis because of changes in the inside market, the re-centering command positions the first and second indicators back in a center portion of the static price axis.
- 14.** The method of claim **12**, wherein the re-centering command is further based on receipt of a manual command from a user input device.
- 15.** The method of claim **11**, wherein the price levels change positions when a value for each price level dynamically changes to a different value for each price level.
- 16.** The method of claim **1**, wherein the trade order parameter is an order quantity.

17. A computer readable medium having program code recorded thereon for execution on a computer having a graphical user interface and a user input device, the program code causing a machine to perform the following method of canceling an order entered for a commodity at an electronic exchange:

receiving data relating to the commodity from the electronic exchange, the data comprising an inside market having a current highest bid price and a current lowest ask price available for the commodity;

setting a trade order parameter;

dynamically displaying a first indicator at a first area corresponding to a first price level along a static price axis, the first indicator being associated with the current highest bid price for the commodity;

dynamically displaying a second indicator at a second area corresponding to a second price level along the static price axis, the second indicator being associated with the current lowest ask price for the commodity;

updating the dynamic display of the first and second indicators such that at least one of the first and second indicators is moved relative to the static price axis to a different area corresponding to a different price level along the static price axis in response to the receipt of new data representing a new inside market;

displaying an order entry region comprising a plurality of areas, each area corresponding to a price level along the static price axis and each

area being selectable by the user input device so as to receive a command to send an order message based on the trade order parameter and the price level that corresponds with the selected area to the electronic exchange;

displaying an entered order indicator at a location corresponding to a particular price level along the static price axis, the entered order indicator being associated with an order entered at the electronic exchange at the particular price level; and

receiving a single action command that selects the location associated with the entered order indicator so as to cancel the order at the electronic exchange.

18. The computer readable medium of claim **17**, further comprising program code causing the machine to perform the following method step:

receiving a command to enter the order at the electronic exchange, the command resulting from selecting a particular area in the order entry region corresponding to a desired price level as part of a single action of a user with a pointer of the user input device positioned over the particular area to both set an order price parameter for the order based on the desired price level and send the order to the electronic exchange.

19. The computer readable medium of claim **17**, wherein the single action command consists of a single click of the user input device.

20. The computer readable medium of claim 17, wherein the single action command consists of a double click of the user input device.

21. The computer readable medium of claim 17, further comprising program code causing the machine to perform the following method step:

displaying an entered order region for displaying the entered order indicator, the entered order region comprising a plurality of locations, such that each location corresponds to a price level along the static price axis.

22. The computer readable medium of claim 17, wherein the entered order indicator displays a current status of the order at the electronic exchange.

23. The computer readable medium of claim 17, wherein displaying the current status comprises dynamically displaying a number of ordered lots of the commodity that have been bought or sold since the order was placed at the electronic exchange.

24. The computer readable medium of claim 17, wherein displaying the current status comprises dynamically displaying a number of ordered lots of the commodity that are currently working at the particular price level since the order was placed at the electronic exchange.

25. The computer readable medium of claim 17, wherein price levels along the static price axis are displayed.

26. The computer readable medium of claim **17**, wherein the static price axis is positioned vertically, horizontally, or at some other angle.

27. The computer readable medium of claim **17**, further comprising program code causing the machine to perform the following method step:

receiving a re-positioning instruction causing the price levels to change positions along the static price axis.

28. The computer readable medium of claim **27**, wherein the re-positioning instruction is a re-centering command.

29. The computer readable medium of claim **28**, wherein as a result of the first and second indicators moving away from the center portion of the static price axis because of changes in the inside market, the re-centering command positions the first and second indicators back in a center portion of the static price axis.

30. The computer readable medium of claim **28**, wherein the re-centering command is further based on receipt of a manual command from a user input device.

31. The computer readable medium of claim **27**, wherein the price levels change positions when a value for each price level dynamically changes to a different value for each price level.

32. The computer readable medium of claim **11**, wherein the trade order parameter is an order quantity.

* * * * *

App. 462

UNITED STATES PATENT AND TRADEMARK
OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,725,382 B2
APPLICATION NO. : 11/585966
DATED : May 25, 2010
INVENTOR(S) : Gary Allan Kemp, II et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Claim 23, column 14, line 45: please delete
“claim 17” and insert --claim 22--.

Claim 32, column 16, Line 5: please delete
“claim 11” and insert --claim 17--.

Signed and Sealed this

Twenty-seventh Day of December, 2011

David J. Kappos

*Director of the United States Patent and Trademark
Office*