

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHICAGO MERCANTILE EXCHANGE, INC.,
Petitioner,

v.

5th MARKET, INC.,
Patent Owner.

Case CBM2013-00027
Patent 6,418,419 B1

Before JAMESON LEE, JONI Y. CHANG, and MICHAEL R. ZECHER,
Administrative Patent Judges.

ZECHER, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 328(a) and 37 C.F.R. § 42.73

I. BACKGROUND

Petitioner, Chicago Mercantile Exchange, Inc. (“CME”), filed a Petition requesting a review under the transitional program for covered business method patents of claims 1–23 and 41–49 of U.S. Patent No. 6,418,419 B1 (“the ’419 patent”). Paper 3 (“Pet.”). Patent Owner, 5th Market, Inc. (“5th Market”), timely filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). Taking into account the arguments presented in 5th Market’s Preliminary Response, the Board determined that the information presented in CME’s Petition demonstrated that it was more likely than not that claims 1–23 are indefinite under 35 U.S.C. § 112 ¶ 2, and that claims 1–23 and 41–49 are unpatentable under 35 U.S.C. § 103(a). Pursuant to 35 U.S.C. § 324,¹ the Board instituted this proceeding on December 18, 2013, as to these claims of the ’419 patent. Paper 9 (“Dec.”).

During the course of this proceeding, 5th Market timely filed a Patent Owner Response (Paper 20, “PO Resp.”), along with a Motion to Amend (Paper 21, “Mot. to Amend”). CME timely filed a Reply to the Patent Owner Response (Paper 24, “Pet. Reply”), along with an Opposition to the Motion to Amend (Paper 23, “Opp. to Amend”). 5th Market timely filed a Reply to the Opposition to the Motion to Amend. Paper 26 (“Reply to

¹ See section 18(a) of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284, 329 (2011) (“AIA”). Section 18(a)(1) of the AIA provides that the transitional program for covered business method patents will be regarded as a post-grant review under chapter 32 of title 35 United States Code and will employ the standards and procedures of a post-grant review, subject to certain exceptions.

Amend”). An oral hearing was held on August 7, 2014, and a transcript is of record. Paper 32.

We have jurisdiction under 35 U.S.C. § 6(c). This decision is a Final Written Decision under 35 U.S.C. § 328(a) as to the patentability of claims 1–23 and 41–49 of the ’419 patent. For the reasons discussed below, CME has demonstrated by a preponderance of the evidence that claims 1–23 are indefinite under 35 U.S.C. § 112 ¶ 2, and that claims 1–4, 6–23, and 41–49 are unpatentable under 35 U.S.C. § 103(a). CME has not demonstrated by a preponderance of the evidence that claim 5 is unpatentable under 35 U.S.C. § 103(a). We also deny 5th Market’s Motion to Amend.

A. Related Matter

After we instituted a review of the ’419 patent, CME file a Petition challenging the patentability of claims 1, 2, 4, 6–8, and 10 of U.S. Patent No. 7,024,387 B1 (“the ’387 patent). *Chicago Mercantile Exch., Inc. v. 5th Mkt., Inc.*, Case CBM2014-00114, Paper 2 (PTAB April 3, 2014). The ’387 patent is a child of the ’419 patent. CBM2014-00114, Ex. 1001, at [63]. We instituted a covered business method patent review only as to claims 4, 6–8, and 10 of the ’387 patent under 35 U.S.C. § 103(a) as being obvious over two of the prior art references that serve as the basis of the grounds of unpatentability instituted in this proceeding. CBM2014-00114, Paper 9. CME also identifies the following reexaminations involving the ’419 patent and the ’387 patent: (1) Reexamination Control Nos. 90/011,603 and 90/011,618, both of which involve the ’419 patent; and (2) Reexamination Control No. 95/002,032, which involves the ’387 patent. Pet. 6–7.

B. CME's Standing

Section 18 of the AIA governs the transitional program for covered business method patent reviews. Section 18(a)(1)(B) of the AIA limits such reviews to persons, or their privies, that have been sued or charged with infringement of a covered business method patent. CME asserts that it has been sued for infringement of the '419 patent and the '387 patent in *Fifth Market, Inc. v. CME Group Inc.*, No. 08-0520 GMS (D. Del.). Pet. 6.

C. The '419 Patent

The '419 patent generally relates to the conditional trading of securities, such as convertible bond swaps, risk arbitrage, and combinations thereof, in both listed and over-the-counter markets via one or more electronic networks. Ex. 1001, 1:7–13. According to the '419 patent, there is no computer network that links participants involved in convertible securities in a transaction-oriented format. *Id.* at 1:32–33. Virtually every transaction is through verbal private negotiations, i.e., almost every bid, offer, or trade is made verbally and is transmitted only to the participants involved. *Id.* at 1:33–36. The '419 patent purportedly solves this problem by creating an anonymous auction market, instead of a negotiated market, that displays prices to all participants and saves the trade information for later use. *Id.* at 1:36–41.

Figure 1 of the '419 patent, reproduced below, illustrates a conditional order transaction system. Ex. 1001, 4:39–41.

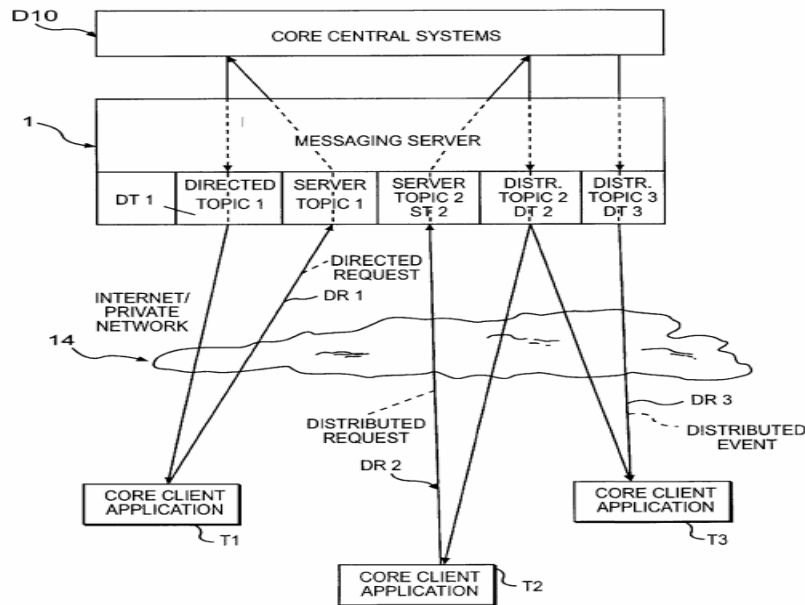
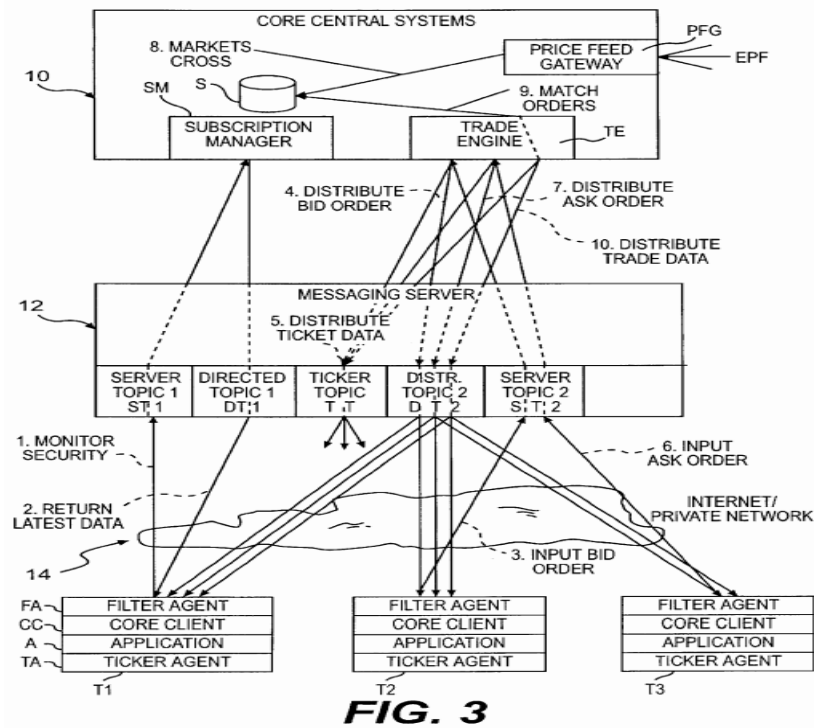


FIG. 1

As shown in Figure 1 of the '419 patent, there are three scenarios which use a conditional order routing exchange (“CORE”). *Id.* at 5:16–18. The first scenario includes CORE client program T1, which formats and transmits a client/subscriber/trade request with a directed response; the second scenario includes CORE client program T2, which formats and transmits a client request whose response is disseminated to various interested parties; and the third scenario involves CORE client program T3, which receives data that originates outside the system and, subsequently, redistributes it to all interested parties. *Id.* at 5:18–61.

Figure 3 of the '419 patent, reproduced below, illustrates the processing of a match order using the conditional order transaction system of Figure 1. Ex. 1001, 4:45–46, 6:41–42.



As shown in Figure 3 of the '419 patent, a first client requests to be informed about events relating to a given security; a second client places a bid for that security; and a third client places an ask for that same security. *Id.* at 6:42–46. The processing steps illustrated in Figure 3 of the '419 patent are as follows: (1) Monitor Security; (2) Return Latest Data; (3) Input Bid Order; (4) Distribute Bid Order; (5) Distribute Ticker Data; (6) Input Ask Order; (7) Distribute Ask Order (also Distribute Ticker Data); (8) External Prices Converge Making Orders Cross; (9) Match Crossed Orders; and (10) Distribute Trade Details. *Id.* at 6:47–62.

D. Illustrative Claims

Claims 1, 41, and 43 are independent claims. Claims 2–23, 44, and 45 directly or indirectly depend from independent claim 1; claims 42, 46, and 47 directly depend from independent claim 41; and claims 48 and 49 directly depend from independent claim 43. Independent claims 1 and 41, as amended following *ex parte* reexamination of the '419 patent, are illustrative of the challenged claims and are reproduced below:

1. A conditional order transaction network that matches or compares buy and sell orders for a plurality of security instruments based upon conditions set forth within the order, including price represented as an algorithm with constraints thereon, the transaction network comprising:
 - a variable number of trader terminals for entering an order for a security instrument in a form of an algorithm with constraints thereon that represent a willingness to transact, where price of one security is a dependent variable of the algorithm within the constraints and dynamically changing price of another security is an independent variable thereof, the price as the dependent variable being continuously changeable responsive to changes in price of the independent variable, the algorithm representing a buy or sell order; and
 - at least one controller computer coupled to each of the variable number of trader terminals over a communications network and receiving as inputs,
 - a) each algorithm with its corresponding constraints, and
 - b) at least one external price feed depicting prices of various securities and contracts from external multiple exchanges which may be used as an independent variable of the algorithm or an input to a constraint variable, the controller computer comprising,
 - means for matching, in accordance with the constraints and the conditions, algorithmic buy orders with algorithmic sell

orders, one of the conditions being a requirement that two or more securities are tradable contemporaneously as a contingent trade of those respective securities, and

means for matching or comparing, in accordance with the constraints and the conditions, algorithmic buy/sell orders with algorithmic or non-algorithmic sell/buy orders through use of the external multiple data sources.

Ex. 2001, 1:26–61 (brackets and italics omitted).²

41. A conditional order transaction network that matches buy and sell orders for a plurality of items based upon conditions set forth within an order for an item, including price represented as an algorithm with constraints thereon, the conditional order transaction network comprising:

a variable number of trader terminals for entering the order for a traded item being an option in a form of an algorithm with constraints thereon that represent a willingness to transact, where price of the traded item is a dependent variable of the algorithm within the constraints and dynamically changing price of another item is an independent variable thereof, the price of the traded item as the dependent variable being continuously changeable responsive to changes in price of the another item as the independent variable, the algorithm representing a buy or sell order for said traded item;

controller computer means coupled to each of the variable number of trader terminals over a communications network and receiving as inputs each algorithm with its corresponding constraints, and at least one external price feed depicting at least one price of at least one item from at least one external network which is used as either the independent

² Exhibit 2001 was entered into the record by 5th Market and refers to *Ex Parte* Reexamination Certificate No. US 6,418,419 C1 issued on February 21, 2013.

variable of the algorithm or an input to a constraint variable;
and

means for matching, in accordance with the constraints and the conditions, through use of the at least one external price feed from the at least one external network, at least one of algorithmic or non-algorithmic buy orders with algorithmic sell orders, and non-algorithmic buy orders with algorithmic sell orders, one of the conditions being a requirement that two or more securities are tradable contemporaneously as a contingent trade of those respective securities responsive to changes in price of said another item as the independent variable.

Id. at 3:1–37 (brackets and italics omitted).

E. Covered Business Method Patent

Upon considering the information presented by CME in its Petition, as well as the arguments presented by 5th Market in its Preliminary Response, we determined that the '419 patent is a covered business method patent, as defined in section 18(a)(1)(E) of the AIA and 37 C.F.R. § 42.301, because at least one claim of the '419 patent is directed to a covered business method. Dec. 8–10. Consequently, we concluded that the '419 patent is eligible for a covered business method patent review. *Id.* at 10.

In its Patent Owner Response, 5th Market contends that a review was improperly instituted as to claims 1–23 of the '419 patent on the basis of 35 U.S.C. § 112 ¶ 2 because questions of patentability under § 112 ¶ 2 are ineligible for review under the transitional program for covered business method patents. PO Resp. 73. We are not persuaded by 5th Market's assertion that a petitioner in a covered business method patent review may not raise questions of patentability under U.S.C. § 112 ¶ 2. As we explained

previously, section 18(a)(1) of the AIA provides that the transitional program for covered business method patents will be regarded as a post-grant review under chapter 32 of title 35 of the United States Code and will employ the standards and procedures of a post-grant review, subject to certain exceptions. Section 321(b) of title 35 provides that “[a] petitioner . . . may request to cancel as unpatentable 1 or more claims of a patent on any ground that could be raised under paragraph (2) or (3) of section 282(b).” Section 282(b)(3) of title 35 provides, in relevant part, that a petitioner may challenge the “[unpatentability] of the patent or any claim in suit for failure to comply with—(A) any requirement of section 112, except . . . the failure to disclose the best mode.” Therefore, contrary to 5th Market’s assertion, a petitioner in a covered business method patent review may raise questions of patentability under U.S.C. § 112 ¶ 2.

1. Technological Invention

The definition of a “covered business method patent” in section 18(d)(1) of the AIA does not include patents for “technological inventions.” When determining whether a patent is for a technological invention, we consider “whether the claimed subject matter as a whole recites a technological feature that is novel and unobvious over the prior art; and solves a technical problem using a technical solution.” 37 C.F.R. § 42.301(b).

In its Patent Owner Response, 5th Market contends that the ’419 patent, viewed as a whole, falls within the purview of the technological invention exclusion set forth in 37 C.F.R. § 42.301(b). PO Resp. 73. 5th

Market relies upon the legislative history of the AIA to support this argument. *Id.* According to 5th Market, examples of subject matter that should not be subject to the transitional program for covered business method patents include ““novel software tools and graphical user interfaces that are used by the electronic trading industry workers to implement trading or asset allocation strategies.”” *Id.* at 73–74 (quoting 175 CONG. REC. S5433 (daily ed. Sept. 8, 2011) (statement of Sen. Durbin)) (emphasis omitted). 5th Market, however, does not explain adequately how the ’419 patent, viewed as a whole, includes novel software tools and graphical user interfaces. Notwithstanding 5th Market’s general allegation, we maintain our initial determination that CME has demonstrated that the ’419 patent is not for a technological invention and, therefore, is eligible for a covered business method patent review. Dec. 9–10.

F. Prior Art Relied Upon

CME relies upon the following prior art references:

Lupien US 5,101,353 Mar. 31, 1992 (Ex. 1010)

Memorandum from the Commodity Futures Trading Commission on the New York Mercantile Exchange’s (“NYMEX”) Proposal to Implement the NYMEX ACCESS Trading System (Dec. 7, 1992) (on file with the CFTC) (Ex. 1009) (“CFTC”).

RICHARD S. WILSON & FRANK J. FABOZZI, CORPORATE BONDS STRUCTURES & ANALYSIS (1996) (Ex. 1011) (“Wilson”).

Allan D. Grody et al., *Global Electronic Markets A Preliminary Report of Findings* (Center for Digital Economy Research, Working Paper No. STERN IS-95-18, 1994) (Ex. 1012) (“Grody”).

DICTIONARY OF FINANCE & INVESTMENT TERMS (4th ed. 1995)
(Ex. 1013) (“Dictionary”).

Globex User Guide, REUTERS Ltd. (1996) (Ex. 1014) (“Globex User Guide”).

G. Instituted Grounds of Unpatentability

We instituted this proceeding based on the asserted grounds of unpatentability set forth in the table below.

References	Basis	Claims Challenged
	§ 112 ¶ 2	1–23
CFTC and Lupien	§ 103(a)	1, 2, 4, 6–8, 11, 15, 16, 22, 23, and 41–49
CFTC, Lupien, and Wilson	§ 103(a)	3 and 5
CFTC, Lupien, and Grody	§ 103(a)	9, 10, 12, 14, and 18
CFTC, Lupien, and Dictionary	§ 103(a)	13 and 17
CFTC, Lupien, and Globex User Guide	§ 103(a)	19–21

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 of the patent in which they appear. 37 C.F.R. § 42.300(b). Under the broadest reasonable interpretation standard, and absent any special definitions, claims terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

1. Claim Phrases Construed in the Decision to Institute

In its Petition, CME identified several claim phrases recited in the '419 patent, including two means-plus-function limitations, and provided claim constructions for those phrases. Pet. 8–15. Those claim phrases are listed as follows: (1) “means for matching” (claims 1, 41, and 43); (2) “means for matching or comparing” (claim 1); (3) “comparator for comparing all incoming orders relative to outgoing orders” (claims 23 and 42); (4) “external price feed” (claims 1, 41, and 43); and (5) “controller computer means” (claims 41 and 43). Pet. 8–15. In its Preliminary Response, 5th Market proposed alternative claim constructions for all the claim phrases identified by CME in its Petition, except “controller computer means” (claims 41 and 43). Prelim. Resp. 13–19. In the Decision to Institute, we construed each claim phrase identified in the Petition. Dec. 13–23.

In its Patent Owner Response, 5th Market proposes alternative claim constructions for the claim phrases “external price feed” (PO Resp. 9–10) and “means for comparing” (*id.* at 76–78). 5th Market, however, does not propose alternative claim constructions for the remaining claim phrases that we construed in the Decision to Institute. In its Reply, CME does not propose an alternative claim construction for any claim phrase that we construed in the Decision to Institute. With the exception of “external price feed” and “means for comparing,” which we will address below, we discern no reason to address or alter our claim constructions for the remaining claim

phrases in this Final Written Decision. For convenience, those claim constructions are reproduced in the table below.

Claims	Claim Phrase	Claim Construction
1, 41, and 42	“means for matching”	<u>Claimed function</u> : “matching” <u>Corresponding structure</u> : “a computer programmed to perform the ten processing steps illustrated in Figure 3 of the ’419 patent”
23 and 42	“a comparator for comparing all incoming orders relative to outgoing orders”	“a device that ‘compare[s] all incoming orders relative to outgoing orders”
41 and 43	“controller computer means . . . receiving as inputs”	“a computer that receives, as input, data”

2. “external price feed” (claims 1, 41, and 43)

Independent claim 1 recites, in relevant part, “at least one external price feed depicting prices of various securities and contracts from external multiple exchanges which may be used as an independent variable of the algorithm or an input to a constraint variable.” Ex. 2001, 1:46–50.

Independent claims 41 and 43 recite similar claim limitations. *Id.* at 3:22–26, 4:17–20. In the Decision to Institute, we construed the claim phrase “external price feed” as “price data received from outside of the conditional order transaction network.” Dec. 20–22. To support our claim construction, we relied upon two disclosures in the Specification of the ’419 patent. *Id.* at 21 (citing Ex. 1001, 2:64–3:2 (“orders are made . . . as a product of the data

originating outside of the system, i.e., external data sources”), 5:56–60 (“[the CORE trading engine] receive[s] data, from some external source”).

In its Patent Owner Response, 5th Market attempts to clarify what “outside” the network means in the context of the ’419 patent. PO Resp. 9–10. 5th Market asserts that “outside” the network means either a marketplace trading, but not aggregating orders for, the same securities or items as the originating CORE trading engine illustrated, e.g., in Figure 1 of the ’419 patent, or a diverse marketplace, i.e., one trading securities or items not traded or aggregated by the same originating CORE trading engine. *Id.* at 10. To support this assertion, 5th Market relies upon the testimony of its expert witness, Dr. Terry Rickard, as well as the district court’s claim construction of the term “external.” *Id.* (citing Ex. 2008 ¶ 28; Ex. 1006, 3). In its Reply, CME does not propose an alternative claim construction for the claim phrase “external price feed,” nor does CME attempt to clarify what “outside” the network means in the context of the ’419 patent.

We are not persuaded by 5th Market’s proposed claim construction of the claim phrase “external price feed” because its construction of “outside” the network is overly narrow. 5th Market does not direct us to a disclosure in the Specification of the ’419 patent that suggests “outside” the network should be limited to a marketplace trading, but not aggregating orders for, the same securities or items as the originating CORE trading engine, or a diverse marketplace that does not trade or aggregate the same securities or items, as the originating CORE trading engine. 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 (Fed. Cir. 1998); *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433 (Fed. Cir. 1988). We decline to adopt 5th Market’s construction of “outside” the network as the broadest reasonable interpretation, as it would import extraneous limitations into the claims, and it would be inconsistent with the Specification of the ’419 patent. 5th Market’s attempt to limit “outside” the network to the two types of marketplaces identified above is not necessary to give meaning to the claim phrase “external price feed,” and should not be read into the claims that recite this feature.

We maintain that the broadest reasonable interpretation of the claim phrase “external price feed” is “price data received from outside of the conditional order transaction network.” As we explained in the Decision to Institute (Dec. 20–22), this claim construction is consistent with the ordinary and customary meaning of “external,” as would be understood by one with ordinary skill in the art, in light of the ’419 patent.

3. “*means for comparing*” (*claim 1*)

Independent claim 1 recites, in relevant part, “means for matching or comparing, in accordance with the constraints and the conditions, algorithmic buy/sell orders with algorithmic or non-algorithmic sell/buy orders through use of the external multiple data sources.” Ex. 2001, 1:57–61. As we explained in the Decision to Institute, because the claim phrase “means for matching or comparing” includes alternative language, i.e., “or,” it includes two alternative functions that should be addressed separately.

Dec. 16. The parties do not dispute our construction of the claim phrase “means for matching,” which is reproduced in the table above. The dispute between the parties centers on the claim phrase “means for comparing.”

With respect to “means for comparing,” we note that the parties do not dispute that it is a means-plus-function limitation. As we indicated in the Decision to Institute, this claim phrase uses the term “means for,” the term “means for” is modified by functional language—namely, “comparing”—and the term “means for” is not modified by sufficient structure recited in the claim to perform the recited function of “comparing.”

Dec. 16. Upon reviewing the portions of the Specification of the ’419 patent cited by 5th Market in its Preliminary Response that purportedly identify the corresponding structure that performs the recited function of “comparing” (Ex. 1001, 13:44–14:45, 15:11–19, Figs. 3, 4), we determined that the Specification fails to disclose sufficient structure. Dec. 17–18. As a result, we construed “means for comparing” as simply a computer programmed to compare data. *Id.* at 18.

In its Patent Owner Response, 5th Market directs us to another disclosure in the ’419 patent that purportedly identifies the corresponding structure for performing the recited function of “comparing.” PO Resp. 76–77 (citing Ex. 1001, 17:20–18:20—i.e., “Table 1”). In particular, 5th Market argues that the CORE trading engine disclosed, e.g., in Figure 1 of the ’419 patent, is tantamount to a general purpose computer. *Id.* 5th Market then argues that Table 1 of the ’419 patent discloses conditions, such as price, quantity, minimum quantity, cap, and a collar kill, which collectively define

an algorithm that compares orders. *Id.* at 77. 5th Market also asserts that the description of the CORE trading engine in the '419 patent, along with the conditions specified in Table 1, amounts to a special purpose computer for performing the recited function of “comparing.” *Id.* at 77–78 (citing Ex. 2008 ¶¶ 86, 87).

In its Reply, CME contends that the Specification of the '419 patent does not disclose an algorithm for performing the recited function of “comparing.” Pet. Reply 15. CME argues that, at best, Table 1 of the '419 patent discloses the types of orders that may be handled by the CORE trading engine, but this, by itself, is not sufficient to satisfy the requirements of 35 U.S.C. § 112 ¶ 6. *Id.*

When construing a means-plus-function limitation under 35 U.S.C. § 112 ¶ 6,³ the corresponding structure of a means-plus-function limitation must be more than simply a general-purpose computer or microprocessor to avoid impermissible functional claiming, unless certain narrow exceptions concerning generic computer functions apply. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008); *see In re Katz Interactive Call Proc. Patent Litig.*, 639 F.3d 1303, 1316 (Fed. Cir. 2011). That is, the specification must disclose “enough of an algorithm to provide the necessary structure under § 112, ¶ 6” or a disclosure that can be

³ Section 4(c) of the AIA re-designated 35 U.S.C. § 112 ¶ 6 as 35 U.S.C. § 112(f). Nonetheless, because the '419 patent has a filing date before September 16, 2012 (the effective date of the AIA), we refer to the pre-AIA version of 35 U.S.C. § 112.

expressed in any understandable terms, e.g., a mathematical formula, in prose, or as a flowchart. *Finisar Corp. v. The DirectTV Grp., Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008). Simply reciting a claimed function in the specification, and saying nothing about how the computer or processor ensures that such a function is performed, is not a sufficient disclosure for an algorithm which, by definition, must contain a sequence of steps. *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1384 (Fed. Cir. 2009).

According to the Specification of the '419 patent, Table 1 includes conditions that are available for input by subscribers, viewable by other subscribers, and executed by the system's trading engine, e.g., the CORE trading engine illustrated in Figure 1. Ex. 1001, 17:20–23. Although the CORE trading engine is tantamount to a general purpose computer, there is no explicit disclosure that explains how the conditions included in Table 1 are used to compare orders. For instance, Table 1 includes, amongst other conditions, price, quantity, minimum quantity, cap, and a collar kill that may be used to compare orders. *Id.* at 17:25–18:20. Table 1, however, does not disclose a well-defined or otherwise recognizable sequence of steps that uses these conditions to compare orders. *See Blackboard*, 574 F.3d at 1384. Absent such a disclosure, we are not persuaded that the Specification of the '419 patent discloses a specific algorithm that transforms an otherwise general purpose computer into a special purpose computer programmed to perform the recited function of “comparing.” *See Finisar*, 523 F.3d at 1340.

In summary, because Federal Circuit precedent dictates that the corresponding structure for performing a specialized function, as here, cannot just be a general purpose computer, the Specification of the '419 patent fails to disclose sufficient structure for performing the recited function of “comparing.”

B. 35 U.S.C. § 112 ¶ 2 Ground of Unpatentability

1. “means for comparing” (claims 1–23)

CME contends that claims 1–23, each of which recites the claim phrase “means for comparing,” are indefinite under 35 U.S.C. § 112 ¶ 2. Pet. 15–18. CME contends that the Specification of the '419 patent fails to disclose an algorithm for performing the recited function of “comparing” and, therefore, claims 1–23 are indefinite under § 112 ¶ 2. *Id.* (citing Ex. 1005 ¶ 92). In its Preliminary Response, 5th Market first contends that the Specification of the '419 patent provides several disclosures, including diagrams, that purportedly identify the corresponding structure for performing the recited function of “comparing.” Prelim. Resp. 27–28 (citing Ex. 1001, 13:44–14:45, 15:11–19, Fig. 4). Upon considering CME’s analysis and supporting evidence in the Petition, and taking into account 5th Market’s arguments presented in its Preliminary Response, we determined that it was more likely than not that claims 1–23 are indefinite under § 112 ¶ 2. Dec. 24–27.

In its Patent Owner Response, 5th Market pivots and directs us to different disclosures in the Specification of the '419 patent, particularly the CORE trading engine illustrated in Figure 1 and the conditions specified in

Table 1, that purportedly identify the corresponding structure for performing the recited function of “comparing.” PO Resp. 76–77 (citing Ex. 1001, 17:20–18:20; Ex. 2008 ¶ 86). 5th Market argues that these disclosures in the Specification collectively amount to a structure in the form of an algorithm that transforms an otherwise general purpose computer into a special-purpose computer programmed to perform the recited function of “comparing.” *Id.* at 77–78 (citing Ex. 2008 ¶ 87). In its Reply, CME contends that the ’419 patent does not disclose an algorithm for comparing orders, nor does it explain how a computer may be programmed to compare algorithmic orders with algorithmic or non-algorithmic orders. Pet. Reply 15.

As we explained in the claim construction section above, upon reviewing the disclosures in the Specification of the ’419 patent relied upon by 5th Market in its Patent Owner Response, the Specification of the ’419 patent fails to disclose sufficient structure for performing the recited function of “comparing.” In other words, the conditions included in Table 1 of the ’419 patent, by themselves, do not set forth a well-defined or otherwise recognizable sequence of steps for comparing orders and, therefore, do not amount to a specific algorithm that transforms an otherwise general purpose computer into a special purpose computer programmed to perform the recited function of “comparing.” *See Blackboard*, 574 F.3d at 1384; *Finisar*, 523 F.3d at 1340. Consequently, we conclude that CME has demonstrated by a preponderance of evidence that claims 1–23, each of

which recites the claim phrase “means for comparing,” are indefinite under § 112 ¶ 2.

C. 35 U.S.C. § 103(a) Grounds of Unpatentability Based, in Whole or in Part, on the Combination of CFTC and Lupien

In its Petition, CME contends that: (1) claims 1, 2, 4, 6–8, 11, 15, 16, 22, 23, and 41–49 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC and Lupien; (2) claims 3 and 5 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Wilson; (3) claims 9, 10, 12, 14, and 18 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Grody; (4) claims 13 and 17 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Dictionary; and (5) claims 19–21 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Globex User Guide. Pet. 54–77. In support of these asserted grounds of unpatentability, CME relies upon claim charts to explain how the proffered combinations teach the claimed subject matter recited in each of these challenged claims, as well as the Declaration of Dr. Craig Pirrong (Ex. 1005 ¶¶ 119–138) to support its positions. *Id.*

In its Patent Owner Response, 5th Market presents the following arguments: (1) the combination of CFTC and Lupien does not teach using an external price feed to match orders in the manner required by independent claims 1, 41, and 43; (2) CME fails to provide an articulated reason with a rationale underpinning to combine the teachings of CFTC and Lupien; (3) modifying CFTC’s automated order matching system—the NYMEX

ACCESS system—with Lupien’s external price feed would change CFTC’s principle of operation or otherwise render CFTC inoperable for its intended purpose; (4) the combination of CFTC, Lupien, and Wilson does not teach yield spreads as required by dependent claim 5; (5) the combination of CFTC and Lupien does not teach options as required by dependent claim 15; and (6) the combination of CFTC and Lupien does not teach using at least one price from an external price feed as an independent variable of an algorithm, as required by dependent claims 44, 46, and 48, and an input to the constraint variable, as required by dependent claims 45, 47, and 49.
PO Resp. 27–45, 48–71.

We begin our analysis with the principles of law that generally apply to a ground of unpatentability based on obviousness, followed by our determination regarding the knowledge level of a person with ordinary skill in the art, proceeded by brief discussions of CFTC and Lupien, and then we address each of 5th Market’s arguments in turn.

1. Principles of Law

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter 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 to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in

the art; and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We also recognize that prior art references must be “considered together with the knowledge of one of ordinary skill in the pertinent art.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (citing *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)). We analyze the grounds of unpatentability based, in whole or in part, on the combination of CFTC and Lupien with the principles identified above in mind.

2. *Level of Skill in the Art*

In determining the level of skill in the art, various factors may be considered, including “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citing *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)). There is evidence in the record before us that reflects the knowledge level of a person with ordinary skill in the art. CME’s expert witness, Dr. Pirrong, attests that a person with ordinary skill in the art would be an individual who possesses the following: (1) a bachelor’s degree in computer science, or another quantitative field such as mathematics, statistics, economics, or finance; (2) two to five years of work experience in any one of the aforementioned areas; and (3) an understanding of the operation of markets for financial instruments, including computerized and electronic markets. Ex. 1005 ¶ 44.

5th Market's expert witness, Dr. Rickard, offers testimony as to the knowledge level of a person with ordinary skill in the art that is essentially the same as Dr. Pirrong's assessment. Dr. Rickard attests that a person with ordinary skill in the art would be an individual who possesses any one of the following: (1) at least two years of work experience with trading software on one or more securities exchanges or private securities markets, and the ability to describe algorithmic trading to programmers with at least two years of programming experience in a securities exchange or private securities market; or (2) a computer programmer with at least two years of programming experience in the area of trading on a securities exchange or private securities marketplace, as well as a general knowledge of the details of algorithmic trading and the characteristics of data from other marketplaces external to his/her work environment. Ex. 2008 ¶ 8.

In addition, the prior art of record in this proceeding also is indicative of the level of ordinary skill in the art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *GPAC*, 57 F.3d at 1579; *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

3. CFTC

CFTC generally relates to New York Mercantile Exchange ("NYMEX") proposed rules and the rule amendments necessary to implement NYMEX American Computerized Commodity Exchange System

and Services (“NYMEX ACCESS”). Ex. 1009, 3.⁴ NYMEX ACCESS is an automated order matching system that may be used by NYMEX members and customers trading through NYMEX members to trade futures and options contracts after regular trading hours. *Id.* In addition to the trade execution function, NYMEX ACCESS provides trade reporting and quotation information for NYMEX ACCESS contracts traded via the system. *Id.* at 3–4.

CFTC discloses a NYMEX ACCESS trade matching host that accepts limit orders, i.e., orders to buy or sell a particular number of futures or option contracts in a given commodity and month at a specified price, and spread orders entered at a differential. Ex. 1009, 19. NYMEX ACCESS terminal operators enter orders into the NYMEX ACCESS system using a Trader Work Station. *Id.* at 4, 9. The NYMEX ACCESS trade matching host is coupled to these Trader Work Stations over a network and, therefore, is capable of receiving the orders entered at each station. *Id.* at 4. Orders cannot be entered into the NYMEX ACCESS system for a customer unless the customer provides the following information: (1) Commodity; (2) Contract Month; (3) Buy or Sell; (4) Account Number; (5) Quantity; (6) Limit Price; (7) Clearing Member; (8) Strike Price and Put or Call; and (9) any precondition for entry into the matching system. *Id.* at 20–21.

CFTC discloses at least one example where the price of one security is dependent on the price of another security being traded. For instance, the

⁴ The page numbers referred to in CFTC are the original page numbers located in the top, middle of each page.

NYMEX ACCESS system may generate implied spread bids and offers by calculating spread differentials based on the current, best prices for each component in the order. Ex. 1009, 28. CFTC also discloses generating conditional bids and offers only if they better the best bids or offers currently in the market. *Id.* at 28–29. These conditional bids and offers adjust as the underlying markets move. *Id.* at 29. If a conditional bid or offer was taken, the NYMEX ACCESS system immediately completes the transaction by buying or selling the number of contracts of securities in accordance with the conditions and constraints entered as part of the order. *Id.*

4. *Lupien*

Lupien generally relates to an automated system for trading securities in financial markets that increases liquidity and depth in such markets by trading portions of normally dormant portfolios, including those with numerous and diverse securities. Ex. 1010, 1:6–11. When discussing the on-line storage devices associated with the automated securities trading system, Lupien discloses that external data is available to clients from securities information vendors. *Id.* at 6:20–22. The external data from securities information vendors may include quote and trade feeds covering current external quotes, trades, and other market data. *Id.* at 9:53–54. As orders are executed, market quotes change, or trades occur in the market, the automated securities trading system updates the market data and portfolio holdings, including cash, and recalculates purchase and sale orders for all relevant securities. *Id.* at 4:32–36.

5. *Claims 1, 41, and 43*

In its Petition, CME contends that CFTC teaches all the limitations recited in each independent claim, except “at least one external price feed depicting prices of various securities and contracts from external multiple exchanges which may be used as an independent variable of the algorithm or an input to a constraint variable,” as recited in independent claim 1, and similarly recited in independent claims 41 and 43. Pet. 57–66. CME then turns to Lupien’s automated trading system that makes external market data from securities information vendors available to clients to teach the aforementioned claim limitation. *Id.* at 59, 62, 65 (citing Ex. 1010, 4:32–36, 6:20–22).

To support combining the teachings of CFTC and Lupien, CME contends that “Lupien, combined with CFTC, discloses executing a trade of multiple securities in the same and diverse markets with a single order where the price of one security is responsive to dynamic changes in price of another security or other securities in that order.” Pet. 56 (citing Ex. 1005 ¶ 123). CME argues that “[i]t would have been obvious to one of ordinary skill in the art to modify the NYMEX ACCESS system described in CFTC, based on Lupien, to use external market data in calculating and matching purchase and sale orders.” *Id.* (citing Ex. 1005 ¶ 124).

a. The Combination of CFTC and Lupien Collectively Teaches Using an External Price Feed to Match Orders in the Manner Required by Independent Claims 1, 41, and 43

Independent claim 1 recites, in relevant part:

at least one external price feed depicting prices of various securities and contracts from external multiple exchanges . . . used as an independent variable of [an] algorithm or an input to a constraint variable . . . and . . . matching . . . in accordance with the constraints and the conditions, algorithmic buy/sell orders with algorithmic or non-algorithmic sell/buy orders through use of the external multiple data sources.

Ex. 2001, 1:46–61 (emphasis omitted). Independent claims 41 and 43 recite similar limitations. *Id.* at 3:22–32, 3:61–4:2, 4:16–32. Independent claim 41 also recites “a traded item being an option in a form of an algorithm with constraints thereon that represent a willingness to transact, where price of the traded item is a dependent variable of the algorithm within the constraints and dynamically changing price of another item is an independent variable.” *Id.* at 3:8–13 (bracketing and emphases omitted).

In its Patent Owner Response, 5th Market contends that CFTC’s NYMEX ACCESS system only operates outside regular trading hours, merely supplements open outcry trading, employs strict price/time priority rules, eliminates legging risk, does not support option spreads, and does not attempt to create conditional bids or offers for the various legs of inter-market spreads in underlying future markets. *See* PO Resp. 27–33. Based on these contentions, 5th Market asserts that CFTC does not teach using an external price feed to match orders in the manner required by independent

claims 1, 41, and 43. *Id.* at 33–34. Next, 5th Market contends that Lupien does not disclose multi-legged trades that require multiple conditional trades executed together, but instead simply discloses buying or selling a quantity of an individual security with no conditional orders. *Id.* at 35. 5th Market then asserts that Lupien does not teach using an external price feed to match orders in the manner required by independent claims 1, 41, and 43. *Id.* at 35–36.

In its Reply, CME contends that 5th Market’s arguments focus on the teachings of CFTC and Lupien individually, and do not address the combined teachings of these references. Pet. Reply. 2. CME argues that these arguments should be found unpersuasive for the same reasons they were found unpersuasive in the Decision to Institute. *Id.* (citing Dec. 31–33).

5th Market’s arguments directed to the separate teachings of CFTC and Lupien are misplaced. When assessing obviousness, the test is what the combined teachings of the references would have taught or suggested to one with ordinary skill in the art. *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991). In its Petition, CME does not rely upon CFTC to teach an external price feed, nor does CME rely upon Lupien to teach spread orders. Instead, CME relies upon the combined teachings of CFTC and Lupien. That is, CME takes the position that CFTC’s NYMEX ACCESS system, which matches future contracts, option contracts, and spread orders entered at a differential (Ex. 1009, 19, 28–34), in conjunction with the aspect of Lupien’s automated trading system that makes external market data available to its

clients (Ex. 1010, 4:32–36, 6:20–22), collectively teaches using external market data to match orders in the manner required by independent claims 1, 41, and 43. *See* Pet. 57–66.

With respect to independent claim 41 only, we understand 5th Market as contending that the limitation regarding “a traded item being an option in a form of an algorithm with constraints thereon that represent a willingness to transact” to require that the traded item be an option spread order. PO Resp. 31, 33, 52–53. In particular, 5th Market argues that the aforementioned limitation includes algorithmic orders involving options, e.g., an option spread order. *Id.* at 53 (citing Ex. 2008 ¶ 23). 5th Market asserts that, because CFTC’s NYMEX ACCESS system does not possess the functionality to trade option spread orders, CFTC, even if combined with Lupien, does not teach this limitation recited in independent claim 41. *Id.* at 31, 53 (citing Ex. 1009, 34).

5th Market’s argument is not commensurate in scope with the limitation at issue. 5th Market’s argument is predicated on the notion that independent claim 41 requires that the traded item be “an option spread order.” 5th Market and its expert witness, Dr. Rickard, nonetheless readily admit that an option spread order is merely one example of algorithmic orders involving options. PO Resp. 53; *see* Ex. 2008 ¶ 23. Narrowly confining the limitation at issue in independent claim 41 to an option spread order, without considering other orders that may fall within the purview of algorithmic orders involving options, would be contrary to affording this claim its broadest reasonable interpretation. *See* 37 C.F.R. § 42.300(b).

In its Petition, CME contends that the orders entered into the NYMEX ACCESS system are in the form of an algorithm with constraints, such as quantity, limit prices, strike price and put or call, and any precondition for entry into the system. Pet. 60–61 (citing Ex. 1009, 20–21). CME also argues that CFTC’s NYMEX ACCESS system matches spread orders at a differential. *Id.* at 61–62 (citing Ex. 1009, 28, 30–31). Based on these cited disclosures, we are satisfied that CFTC teaches algorithmic orders involving options, as required by independent claim 41.

Based on the record before us, we are persuaded that CME presents sufficient evidence to support a finding that the combination of CFTC and Lupien teaches all the limitations recited in independent claims 1, 41, and 43.

b. CME Provides a Sufficient Rationale to Combine the Teachings of CFTC and Lupien

In its Patent Owner Response, 5th Market contends the CME’s rationale to combine the teachings of CFTC and Lupien is ambiguous, generic, and conclusory. PO Resp. 43. 5th Market argues that the portions of Dr. Pirrong’s testimony relied upon by CME to support its rationale to combine these references does not reveal how, or why, one with ordinary skill in the art would add Lupien’s external price feed to CFTC’s NYMEX ACCESS system. *Id.* at 45.

In its Reply, CME contends that using external price feeds in electronic trading systems was old and well-known in the art prior to the ’419 patent. Pet. Reply 3. To support its argument that traders have long

used price and other data from various sources, including external markets, as a basis for developing trading strategy and making trades, CME relies upon the cross-examination testimony of Dr. Pirrong. *Id.* (citing Ex. 2007, 102:21–104:16, 163:10–13, 165:3–4).

The Supreme Court has held that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 550 U.S. at 416. The Court further instructs that:

[o]ften it will be necessary for a court to look to interrelated teachings of multiple [references]; . . . and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.

Id. at 418. The Court also notes that a person of ordinary skill in the art is “a person of ordinary creativity, not an automaton,” and “will be able to fit the teachings of multiple [references] together like pieces of a puzzle.” *Id.* at 420–21.

As we explained previously, CFTC discloses that the NYMEX ACCESS system trades spread orders at a differential (Ex. 1009, 19, 28–34), and Lupien discloses that its automated trading system makes external market data, particularly price, available to its clients (Ex. 1010, 4:32–36, 6:20–22). With respect to the background knowledge possessed by one with ordinary skill in the art prior to the ’419 patent, we credit the testimony of Dr. Pirrong elicited during his cross-examination. In response to a question

regarding what one with ordinary skill in the art in 1992 would do next to improve CFTC's NYMEX ACCESS system, Dr. Pirrong states that "one of the most important things about trading and traders is information. And so providing more information to traders and providing information in a more . . . convenient and easy-to-understand format would have been an important consideration." Ex. 2007, 102:22–103:4.

In considering the entirety of the record before us, we are persuaded by CME's assertion that "[i]t would have been obvious to one of ordinary skill in the art to modify the NYMEX ACCESS system described in CFTC, based on Lupien, to use external market data in calculating and matching purchase and sale orders." Pet. 56 (citing Ex. 1005 ¶ 124). In particular, we are satisfied that one with ordinary skill in the art would have recognized that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would provide a prospective trader with more information to develop trading strategies and, as a result, provide the trader a better opportunity to successfully complete trades. In that respect, instead of presenting a rationale to combine that is conclusory in nature as asserted by 5th Market, CME has provided an articulated reason with rational underpinnings in urging that an ordinarily skilled artisan would have added Lupien's external price feed to CFTC's NYMEX ACCESS system so as to allow a prospective trader to execute orders across multiple markets. *See* Pet. 56; Ex. 1005 ¶ 123.

c. Adding Lupien's External Price Feed to CFTC's NYMEX ACCESS System Would Not Change CFTC's Principle of Operation or Otherwise Render CFTC Inoperable for its Intended Use

1. Price and Time Priority Rule

In its Patent Owner Response, 5th Market contends that one fundamental principle of operation of CFTC's NYMEX ACCESS system is trading with price and time priority. PO Resp. 49 (citing Ex. 1009, 7, 24–25; Ex. 2007, 93–94), 68, 69–70. According to 5th Market, price and time priority is a rule that indicates price is the first priority, and time is the second priority. *Id.* at 49 (citing Ex. 2008 ¶ 16). 5th Market argues that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would create the possibility of violating the price and time priority rule. *Id.* (citing Ex. 2008 ¶ 80).

In its Reply, CME contends that 5th Market's expert witness, Dr. Rickard, indicated during cross-examination that a person with ordinary skill in the art is capable of programming a price and time priority rule in an automated order matching system. Pet. Reply 9 (citing Ex. 1021, 21:14–22). CME then argues that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would not have introduced any price and time priority issues that a person of ordinary skill in the art could not have recognized and accounted for. *Id.*

For at least two reasons, we are not persuaded by 5th Market's argument that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would violate CFTC's price and time priority rule. First,

we are not convinced that CFTC's price and time priority rule is a fundamental principle of operation of the NYMEX ACCESS system. As we explained previously, CFTC generally relates to an automated order matching system referred to as NYMEX ACCESS. Ex. 1009, 3. Of particular importance here is that CFTC's NYMEX ACCESS system includes a trade matching host that accepts limit orders, such as orders for future contracts, option contracts, and spread orders entered at a differential. *Id.* at 19. Based on these disclosures, the principle of operation that more accurately epitomizes CFTC is using the NYMEX ACCESS system to match orders.

Second, although CFTC discloses that the NYMEX ACCESS system executes orders for future and option contracts based on a set of rules, one of which is price and time priority (Ex. 1009, 23–25), 5th Market does not explain adequately how the price and time priority rule also applies to trading spread orders at a differential. There is no indication in CFTC that the same price and time priority rule would apply when trading spread orders at a differential. *See* Ex. 1009, 27–34. As such, one of ordinary skill in the art would have recognized that a price and time priority rule is not a critical or essential aspect of CFTC's NYMEX ACCESS system because such a rule would have varied depending on the specific type of order executed by the system. Nonetheless, even if we were to assume that the price and time priority rule applies equally to trading spread orders at a differential, 5th Market does not provide sufficient or credible evidence that explains why programming the price and time priority rule in CFTC's

NYMEX ACCESS system to account for Lupien's external price feed would be uniquely challenging or otherwise beyond the level of an ordinary skilled artisan. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161–62 (Fed. Cir. 2007) (holding that Leapfrog had not presented evidence that the proposed modification was “uniquely challenging or difficult for one of ordinary skill in the art” or “represented an unobvious step over the prior art”).

2. *Legging Risk*

In its Patent Owner Response, 5th Market contends that another fundamental principle of operation of CFTC's NYMEX ACCESS system is executing spread orders without legging risk. PO Resp. 50, 68 (citing Ex. 1009, 29). 5th Market argues that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would create the possibility of introducing legging risk to a spread order where no such risk previously existed. *Id.* at 50–51 (citing Ex. 2008 ¶ 79).

In its Reply, CME contends that the portion of CFTC relied upon by 5th Market does not indicate that the NYMEX ACCESS system completely eliminates legging risk in its electronic trades, but instead the legging risk CFTC addresses is the completion of a spread order during open outcry trading. Pet. Reply. 11 (citing Ex. 1009, 29). CME argues that there is a potential for more latency in open outcry trading because it involves shouting and hand signaling to traders across a trading pit. *Id.* CME further argues that CFTC does not assert that the NYMEX ACCESS system eliminates legging risk altogether. *Id.* at 11–12. To support this argument,

CME directs us to the cross-examination of 5th Market's expert witness, Dr. Rickard, during which he purportedly admits that, in the context of electronic trading, although there is some machine latency involved in processing trades, trades generally are considered to be executed simultaneously. *Id.* at 12 (citing Ex. 1021, 29:20–30:23, 56:6–10).

We are not persuaded by 5th Market's argument that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would introduce legging risk to a spread order where no such risk previously existed. When discussing how the NYMEX ACCESS system would treat both legs of a spread order as a single event, CFTC discloses that the NYMEX ACCESS system "would eliminate the risk, inherent in legging into a spread during open outcry trading, that once a position in one leg was established the other leg of the spread could no longer be executed at the appropriate price." Ex. 1009, 29. This disclosure does not contemplate that the NYMEX ACCESS system necessarily eliminates legging risk associated with processing a spread order altogether. Instead, we agree with CME that this disclosure only addresses how completing a spread order using the NYMEX ACCESS system would reduce the latency associated with completing the same spread order during open outcry trading.

Moreover, we credit Dr. Rickard's cross-examination testimony that there is at least some machine latency associated with processing orders in an automated order matching system. *See, e.g.*, Ex. 1021, 29:20–30:23, 56:6–10. As evidenced by this testimony, there is at least some acceptable level of machine latency associated with processing a spread order in

CFTC's NYMEX ACCESS system. 5th Market does not provide sufficient or credible evidence that explains how adding Lupien's external price feed to CFTC's NYMEX ACCESS system adversely impacts this acceptable level of machine latency, or otherwise prevents a trader from using the NYMEX ACCESS system to complete a spread order with minimal legging risk.

3. Liquidity in the Marketplace

In its Patent Owner Response, 5th Market contends that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would reduce the liquidity of CFTC's marketplace because it would divert orders to external markets. PO Resp. 70. To support this argument, 5th Market directs us to Dr. Rickard's testimony that one of ordinary skill in the art "would have considered any scheme to modify an exchange marketplace so as to route some of its order flow to external markets to be contrary to the vested interest of the exchange regarding its market liquidity, i.e., it would not have been considered obvious to pursue." Ex. 2008 ¶ 38.

In its Reply, CME contends that the aforementioned testimony from Dr. Rickard is contradicted by statements he made in other patent applications and patents where he is one of the named inventors. Pet. Reply. 13 (citing Ex. 1023, 1:55–60; Exs. 1024–1027). CME also argues that using an external market price is a benefit to the liquidity of the marketplace receiving the price because the receiving marketplace experiences more trading activity and enhanced trading volume. *Id.* at 14 (citing Ex. 2007, 100:5–21).

We are not persuaded by 5th Market's argument that combining the teachings of CFTC and Lupien would reduce the liquidity of CFTC's marketplace by diverting orders to external markets. 5th Market does not identify clearly the principle of operation that would be changed in CFTC if Lupien's external price feed were added to CFTC's NYMEX ACCESS system. Although increasing liquidity may be an overall goal that each marketplace strives to achieve, other than the testimony offered by Dr. Rickard, there is no other evidence in the record before us that adding external market data to a marketplace would prevent that marketplace from increasing its liquidity. Instead, as we explained above, we credit Dr. Pirrong's cross-examination testimony that an important consideration when looking to improve CFTC's NYMEX ACCESS system is providing traders with more information. *See* Ex. 2007, 102:22–103:4. Applying this testimony to 5th Market's argument regarding reduced liquidity, Dr. Pirrong suggests that adding more information, such as external market data, to a given marketplace would be an improvement in the sense that it promotes liquidity, rather than reduces it.

Even if we assume that a fundamental principle of operation in CFTC's NYMEX ACCESS system is increasing liquidity in its marketplace, we do not credit Dr. Rickard's testimony that one of ordinary skill in the art would have considered any scheme to modify CFTC's marketplace so as to route some of its order flow to external markets to be undesirable. *See* Ex. 2008 ¶ 38. Dr. Rickard's testimony, by itself, suggests that one of ordinary skill in the art would never have a sufficient or credible reason for

incorporating external market data into a marketplace. Dr. Rickard, however, fails to appreciate that an obviousness evaluation is not determined on the basis of absolutes, such as “any” or “never.” One with ordinary skill in the art would have been cognizant of trade-offs, i.e., less of this is offset by more of that, and vice-versa.

Our obviousness evaluation in this case requires us to consider the teachings of CFTC and Lupien together with the knowledge of one of ordinary skill in the pertinent art. *See Paulsen*, 30 F.3d at 1480. We also recognize that CFTC and Lupien must be considered for everything they teach by way of technology and are not limited to the particular invention each reference is describing and attempting to protect. *See EWP Corp. v. Reliance Universal Inc.*, 755 F.2d 898, 907 (Fed. Cir. 1985). There is at least some evidence in the record before us that suggests one of ordinary skill in the art would have appreciated that adding Lupien’s external market data to CFTC’s marketplace would be beneficial because it provides the marketplace with more trading activity and an enhanced trading volume. *See Ex. 2007*, 102:22–103:4, 100:5–21.

d. CME’s Expert Witness, Dr. Pirrong, Does Not Attempt to “Backfill” the Testimony Provided in His Declaration Supporting the Petition by Proposing New Approaches to Combine the Teachings of CFTC and Lupien During Cross-examination

In its Patent Owner Response, 5th Market contends that during the cross-examination of CME’s expert witness, Dr. Pirrong, he attempts to “backfill” the testimony provided in his Declaration supporting the Petition by proposing new approaches for adding Lupien’s external price feed to

CFTC's NYMEX ACCESS system. PO Resp. 17–18 (citing Ex. 2007, 146:4–5, 165:2–5, 165:8–13, 166:6–7, 166:8–11, 177–181), 46–48. Dr. Pirrong was not attempting to introduce new approaches for combining the teachings of Lupien and CFTC to bolster the rationale to combine discussed in the Petition, but instead simply was responding to questions posed by 5th Market's counsel. As we discussed previously, CME provides a sufficient rationale to combine the teachings of CFTC and Lupien in the Petition, itself. We did not rely upon the aforementioned portions of Dr. Pirrong's cross-examination testimony when determining whether CME's Petition provides a sufficient rationale to combine these references. In other words, the portions of Dr. Pirrong's cross-examination testimony cited by 5th Market do not "backfill" the rationale to combine the teachings of CFTC and Lupien set forth by CME in its Petition or otherwise undermine that rationale. 5th Market's arguments in that regard are misplaced because they focus on these approaches as though they were articulated and relied upon in the Petition.

5th Market further contends that there is no guidance in the prior art references, themselves, on how to add Lupien's external price feed to CFTC's NYMEX ACCESS system. PO Resp. 18. The approaches elicited from Dr. Pirrong during cross-examination, however, are not a rebuttal to this contention. Of particular importance for this contention is what 5th Market does not assert. 5th Market does not assert that one of ordinary skill in the art would not have known how to add Lupien's external price feed to CFTC's NYMEX ACCESS system. It is well-settled that "[a] suggestion,

teaching, or motivation to combine the relevant prior art teachings does not have to be found explicitly in the prior art.” *In re Kahn*, 441 F.3d 977, 987–88 (Fed. Cir. 2006). As we explained in the section discussing the rationale to combine the teachings of CFTC and Lupien, one of ordinary skill in the art would have appreciated that adding Lupien’s external price feed to CFTC’s NYMEX ACCESS system would provide a prospective trader with more information to develop trading strategies and, as a result, provide the trader a better opportunity to successfully complete trades. *See supra* II(C)(5)(b).

5th Market also attempts to distinguish the limitations recited in independent claims 1, 41, and 43 from each of the approaches elicited from Dr. Pirrong during his cross-examination. PO Resp. 22–26, 51–57. As we explained above, these approaches were not presented in the Petition or in the accompanying Declaration of Dr. Pirrong. Indeed, we did not consider these approaches when determining whether the asserted grounds of unpatentability based, in whole or in part, on the combination of CFTC and Lupien satisfy the “more likely than not” threshold standard for instituting a covered business method patent review. 35 U.S.C. § 324(a); 37 C.F.R. § 42.208(c).

Moreover, as we discussed previously, CME presents sufficient evidence in its Petition to support a finding that the combination of CFTC and Lupien teaches all the limitations recited in independent claims 1, 41, and 43. *See supra* II(C)(5)(a). 5th Market’s attempt to distinguish the new approaches elicited from Dr. Pirrong during cross-examination from the

limitations recited in independent claims 1, 41, and 43 does not undermine the evidence presented by CME in its Petition or otherwise render Dr. Pirrong's supporting testimony provided in the accompanying Declaration less persuasive.

e. Summary

Based on the record before us, we conclude that CME has demonstrated by a preponderance of the evidence that independent claims 1, 41, and 43 would have been obvious over the combination of CFTC and Lupien.

6. Claims 2–4, 6–14, 16–23, and 42

5th Market does not challenge the contentions and supporting evidence regarding dependent claims 2–4, 6–14, 16–23, and 42 that were presented by CME in its Petition. Pet. 70–77; Ex. 1005 ¶¶ 125–138. Upon reviewing CME's contentions and supporting evidence, we are persuaded that it presents sufficient evidence to support a finding that the cited prior art references teach the claimed subject matter recited in each of these dependent claims. Therefore, based on the record before us, we conclude that CME has demonstrated by a preponderance of the evidence that:

(1) dependent claims 2, 4, 6–8, 11, 16, 22, 23, and 42 would have been obvious over the combination of CFTC and Lupien; (2) dependent claim 3 would have been obvious over the combination of CFTC, Lupien, and Wilson; (3) claims 9, 10, 12, 14, and 18 would have been obvious over the combination of CFTC, Lupien, and Grody; (4) claims 13 and 17 would have been obvious over the combination of CFTC, Lupien, and Dictionary; and

(5) claims 19–21 would have been obvious over the combination of CFTC, Lupien, and Globex User Guide.

7. Claim 5

Dependent claim 5 recites “[t]he conditional order transaction network of claim 2 wherein the price is a yield spread.” Ex. 2001, 2:3–4.

In its Petition, CME contends that the combination of CFTC, Lupien, and Wilson teaches this limitation. Pet. 70–71. In particular, CME argues that Wilson discloses an advertisement for BondNet Trading Systems that indicates its comprehensive transaction system allows a trader to trade on price, yield, or spreads. *Id.* (citing Ex. 1011, 22; Ex. 1005 ¶¶ 126, 127). Based on the cited disclosure in Wilson, along with the supporting testimony from Dr. Pirrong, CME asserts that it would have been obvious to implement price as a yield spread. *Id.* CME further contends that, because Wilson’s BondNet Trading System and CFTC’s NYMEX ACCESS system are both trading systems that offer similar functionality, they are capable of being combined. *Id.*

In its Patent Owner Response, 5th Market contends that Wilson does not teach yield spreads, as required by dependent claim 5. PO Resp. 58. 5th Market argues that the disclosure in Wilson relied upon by CME separates the words “yield” and “spread” by a comma and the word “or,” and, therefore, does not indicate that these words are part of the same multi-word noun phrase, such as “yield spread.” *Id.* (quoting Ex. 1011, 22). 5th Market also argues that CME does not provide an articulated reason with a rational

underpinning to combine Wilson’s one-page advertisement for BondNet with the teachings of CFTC and Lupien. *Id.* at 59–60.

We are not persuaded that CME has presented sufficient evidence to support a finding that Wilson teaches a yield spread, as claimed. Although the cited disclosure in Wilson offsets the words “yield” and “spread” by a comma and the word “or” (Ex. 1011, 22), it does not contemplate that these two words may be used in combination to achieve a “yield spread.” We have reviewed Dr. Pirrong’s supporting testimony and he simply repeats the arguments made by CME in its Petition. Ex. 1005 ¶¶ 126, 127. Dr. Pirrong does not offer an explanation from the perspective of one with ordinary skill in the art as to how the disclosure of “yield” and “spread” in Wilson may be combined to achieve a “yield spread.”

We also are not persuaded that CME provides a sufficient rationale to combine the teachings of CFTC, Lupien, and Wilson. The rationale for combining the teachings of CFTC and Wilson offered by CME indicates, at best, that these prior art references are analogous art to each other. The fact that the prior art references are analogous art, however, does not suffice as an articulated reason with a rational underpinning to combine CFTC, Lupien, and Wilson. The relevant inquiry for a ground of unpatentability based on obviousness is whether the petitioner has set forth “some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418. Notably absent from CME’s rationale for combining CFTC, Lupien, and Wilson is a credible and

sufficient explanation of how these references might be combined to arrive at “price is a yield spread,” as recited in dependent claim 5.

Based on the record before us, we conclude that CME has not demonstrated by a preponderance of the evidence that dependent claim 5 would have been obvious over the combination of CFTC, Lupien, and Wilson.

8. *Claim 15*

Dependent claim 15 recites, “[t]he conditional order transaction network of claim 1 wherein the security instrument for which the order is entered includes options.” Ex. 2001, 2:29–31.

In its Petition, CME contends that CFTC’s NYMEX ACCESS system trades future and option contracts, and, therefore, teaches options, as required by dependent claim 15. Pet. 33 (citing Ex. 1009, 2, 19).⁵ In its Patent Owner Response, 5th Market argues that the options feature recited in dependent claim 15 requires the order to be an option order in the form of an algorithm, e.g., an option spread. PO Resp. 60. 5th Market then asserts that, because CFTC’s NYMEX ACCESS system does not possess the functionality to trade options spreads at a differential, CFTC, even if combined with Lupien, does not teach the options feature recited in dependent claim 15. *Id.* (citing Ex. 1009, 34).

⁵ CME directs us to the claim chart regarding the ground of unpatentability based on the combination of CFTC and Miller, which was not instituted in this proceeding, only to explain how CFTC teaches the limitations recited in dependent claims 2, 4, 6–8, 11, 15, 16, 22, 23, and 42. Pet. 56 n.10.

5th Market's argument is not commensurate in scope with the limitation at issue. 5th Market's argument is predicated on the notion that dependent claim 15 requires "an option spread order." Dependent claim 15, however, only requires that "the security instrument for which the order is entered includes options." Dependent claim 15 does not recite an option order in the form of an algorithm, much less include the words "option spread." Upon ascertaining the proper scope of independent claim 15, we are persuaded that CME presents sufficient evidence to support a finding that CFTC teaches the options feature recited in dependent claim 15. That is, CFTC discloses that the NYMEX ACCESS system accepts limit orders, including option contracts. Ex. 1009, 2, 19.

Based on the record before us, we conclude that CME has demonstrated by a preponderance of the evidence that dependent claim 15 would have been obvious over the combination of CFTC and Lupien.

9. Claims 44–49

Dependent claim 44 recites, in relevant part, "at least one price depicted by the at least one external price feed is used as the independent variable of the algorithm." Ex. 2001, 4:38–40. Dependent claims 46 and 48 recite the same limitation. *Id.* at 4:49–51, 4:58–60. Dependent claim 45 recites, in relevant part, "at least one price depicted by the at least one external price feed is used as the input to the constraint variable." *Id.* at 4:43–44. Dependent claims 47 and 49 recite the same limitation. *Id.* at 4:54–55, 4:63–64.

In its Petition, CME contends that CFTC's NYMEX ACCESS system, which matches spread orders entered at a differential, in conjunction with the aspect of Lupien's automated trading system that makes external market data available to its clients, teaches using price as both "the independent variable of the algorithm," as recited in dependent claims 44, 46, and 48, and "the input to the constraint variable," as recited in dependent claims 45, 47, and 49. Pet. 66–70 (citing Ex. 1009, 28–31; Ex. 1010, 4:32–36, 6:20–22). In its Patent Owner Response, 5th Market contends that CME relies upon the same portions of Lupien to teach both of the aforementioned limitations. PO Resp. 61–63 (citing Pet. 67–69, Ex. 1010, 4:32–36, 6:20–22). 5th Market further argues that the disparate disclosures in Lupien relied upon by CME do not disclose, much less draw a distinction between, using a price as an independent variable of an algorithm and inputting the price as the constraint variable. *Id.* at 63.

Once again, 5th Market's arguments directed to the individual teachings of Lupien are misplaced. When assessing obviousness, the test is what the combined teachings of the references would have taught or suggested to one with ordinary skill in the art. *Young*, 927 F.2d at 591. In its Petition, CME does not rely solely upon Lupien to teach using price as an independent variable of an algorithm and inputting price as the constraint variable, but instead relies upon the combined teachings of CFTC and Lupien. That is, CME takes the position that CFTC's NYMEX ACCESS system, which matches spread orders entered at a differential (Ex. 1009, 28–31), in conjunction with the aspect of Lupien's automated trading system

that makes external market data, particularly price, available to its clients (Ex. 1010, 4:32–36, 6:20–22), collectively teach using price as an independent variable of an algorithm in the manner required by dependent claims 44, 46, and 48, and inputting price as the constraint variable in the manner required by dependent claims 45, 47, and 49. *See* Pet. 66–70.

Moreover, 5th Market does not provide sufficient or credible evidence that explains why, in the context of CFTC’s NYMEX ACCESS system processing different legs of a spread order, using a price received from an external market, as taught by Lupien, as an independent variable of an algorithm, or inputting the price as the constraint variable of the algorithm, would be uniquely challenging or otherwise beyond the level of an ordinary skilled artisan. *See Leapfrog*, 485 F.3d at 1161–62. We are persuaded that CME has presented sufficient evidence to support a finding that the combination of CFTC and Lupien teaches the claimed subject matter recited in dependent claims 44–49.

Based on the record before us, we conclude that CME has demonstrated by a preponderance of the evidence that dependent claims 44–49 would have been obvious over the combination of CFTC and Lupien.

D. 5th Market’s Motion to Amend

In its Motion to Amend, 5th Market moves to substitute claims 50–72 for challenged claims 1–23 only if we determine that these claims, which recite the claim phrase “means for comparing,” are indefinite under 35 U.S.C. § 112 ¶ 2. Mot. to Amend 1–2. As we explained previously, we determine that CME has demonstrated by a preponderance of evidence that

the claim phrase “means for comparing” is indefinite because the Specification of the ’419 patent does not disclose sufficient structure for performing the recited function of “comparing.” *See supra* Section II.B (1). Therefore, 5th Market’s Motion to Amend is before us for consideration. For the reasons set forth below, we deny 5th Market’s Motion to Amend.

Proposed substitute claim 50 is an independent claim. Except for the removal of the language “or compare,” proposed substituted claim 50 is the same as challenged independent claim 1. Proposed substituted claim 50 is reproduced below.

50. A conditional order transaction network that matches or compares buy and sell orders for a plurality of security instruments based upon conditions set forth within the order, including price represented as an algorithm with constraints thereon, the transaction network comprising:

a variable number of trader terminals for entering an order for a security instrument in a form of an algorithm with constraints thereon that represent a willingness to transact, where price of one security is a dependent variable of the algorithm within the constraints and dynamically changing price of another security is an independent variable thereof, the price as the dependent variable being continuously changeable responsive to changes in price of the independent variable, the algorithm representing a buy or sell order; and

at least one controller computer coupled to each of the variable number of trader terminals over a communications network and receiving as inputs,

- a) each algorithm with its corresponding constraints, and
- b) at least one external price feed depicting prices of various securities and contracts from external multiple exchanges which may be used as an independent variable of the

algorithm or an input to a constraint variable, the controller computer comprising,

means for matching, in accordance with the constraints and the conditions, algorithmic buy orders with algorithmic sell orders, one of the conditions being a requirement that two or more securities are tradable contemporaneously as a contingent trade of those respective securities, and

means for matching [or comparing], in accordance with the constraints and the conditions, algorithmic buy/sell orders with algorithmic or non-algorithmic sell/buy orders through use of the external multiple data sources.

Mot. to Amend 3–4 (brackets indicate language 5th Market is seeking to remove). Except for the change in their dependency, proposed substitute claims 51–72 are the same as challenged dependent claims 2–23. *Id.* at 4–8.

A motion to amend claims in a covered business method patent review is not, by itself, an amendment. As the moving party, 5th Market bears the burden of proof to establish that it is entitled to the relief requested. 37 C.F.R. § 42.20(c). As such, 5th Market’s proposed substitute claims 50–72 are not entered automatically, but only upon 5th Market demonstrating by a preponderance of the evidence the patentability of these proposed substitute claims. *See, e.g.*, 37 C.F.R. § 42.1(d) (noting that the “default evidentiary standard [in proceedings before the Board] is a preponderance of the evidence.”).

1. Patentability Over the Prior Art

5th Market bears the burden of proof in demonstrating the patentability of proposed substitute claims 50–72 over the prior art of record, as well as the prior art in general. *See Idle Free Sys., Inc. v. Bergstrom, Inc.*,

Case IPR2012-00027, Paper 26, 7 (PTAB June 11, 2013). In its Motion to Amend, 5th Market must show that the conditions for novelty and non-obviousness are met for the prior art known to 5th Market. With respect to obviousness as the basis of the potential unpatentability of the proposed substitute claims, 5th Market should present and discuss facts which are pertinent to the first three underlying factual inquiries set forth in *Graham*, which include: (1) the scope and content of the prior art; (2) differences between the claimed subject matter and the prior art; and (3) the level of ordinary skill in the art. *Graham*, 383 U.S. at 17–18. 5th Market should provide some discussion and analysis regarding the specific technical disclosure of the closest prior art known to 5th Market, as well as the level of ordinary skill in the art, in terms of ordinary creativity and the basic skill set of a person of ordinary skill in the art.

Without even reaching whether 5th Market has demonstrated patentability over the prior art in general, we are not persuaded that 5th Market has demonstrated by preponderance of evidence that proposed substitute claim 50 is patentable over the prior art of record. We recognize that 5th Market asserts that its Motion to Amend is contingent only upon our determination that independent claim 1 is indefinite under 35 U.S.C. § 112 ¶ 2. When satisfying the requirement to confer with us prior to filing its Motion to Amend, we instructed 5th Market that it must explain, in detail, how each proposed substitute claim obviates all of the grounds of unpatentability instituted in this proceeding. Paper 19, 2. Our instruction in this regard is based on our rules. Pursuant to 37 C.F.R. § 42.221(a)(2)(ii), a

motion to amend may be denied where “[t]he amendment does not respond to a ground of unpatentability involved in the trial.” In this case, because independent claim 1 is involved in more than one instituted grounds of unpatentability, 5th Market cannot simply select one ground and explain how its proposed substitute claim obviates that ground. Instead, when seeking to amend independent claim 1, 5th Market must explain how its amendment obviates each ground of unpatentability instituted in the proceeding that involves independent claim 1—in this case, both the ground of unpatentability based on 35 U.S.C. § 112 ¶ 2 and the ground of unpatentability based on 35 U.S.C. § 103(a).

5th Market contends that, because its proposed amendment only seeks to remove the language “or compare” from independent claim 1, the arguments presented by 5th Market in its Patent Owner Response against independent claim 1 fully traverse any grounds of unpatentability under 35 U.S.C. § 103(a) that would have applied to proposed substitute claim 50. Mot. to Amend. 12. As we explained previously, because the claim phrase “means for matching or comparing” recited in independent claim 1 includes alternative language, i.e., “or,” it includes two alternative functions. The prior art need only satisfy the “means for matching” limitation, along with the other limitations recited in independent claim 1, to render the claim unpatentable. Therefore, even if we were to enter 5th Market’s amendment that removes the language “or compare” from independent claim 1, the combined teachings of CFTC and Lupien still would have rendered proposed substitute claim 50 unpatentable. *See supra* Section II.C (5)(a–e).

In any event, we note that our rules prohibit incorporating arguments by reference. Pursuant to 37 C.F.R. § 42.6(a)(3), “[a]rguments must not be incorporated by reference from one document into another document. Combined motions, oppositions, replies, or other combined documents are not permitted.” 5th Market is precluded from incorporating arguments regarding the patentability of independent claim 1 from its Patent Owner Response into its Motion to Amend to address how proposed substitute claim 50 is patentable distinction from the prior art of record. Such incorporation by reference circumvents our rule limiting the pages in a motion to amend to fifteen pages. *See* 37 C.F.R. § 42.24(a)(v). Arguments that are not developed and presented in the Motion to Amend, itself, are not entitled to consideration.

2. *Summary*

For the foregoing reasons, we are not persuaded that 5th Market has met its burden of demonstrating that proposed substitute claims 50–72 are patentable over the prior art of record. Accordingly, we deny 5th Market’s Motion to Amend.

III. CONCLUSIONS

CME has demonstrated by a preponderance of the evidence that claims 1–23 and 41–49 of the ’419 patent are unpatentable based on the instituted grounds of unpatentability set forth in the table below.

References	Basis	Claims Challenged
	§ 112 ¶ 2	1–23
CFTC and Lupien	§ 103(a)	1, 2, 4, 6–8, 11, 15, 16, 22, 23, and 41–49
CFTC, Lupien, and Wilson	§ 103(a)	3
CFTC, Lupien, and Grody	§ 103(a)	9, 10, 12, 14, and 18
CFTC, Lupien, and Dictionary	§ 103(a)	13 and 17
CFTC, Lupien, and Globex User Guide	§ 103(a)	19–21

CME has not demonstrated by a preponderance of the evidence that claim 5 is unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Wilson. Nonetheless, because CME has demonstrated by a preponderance of the evidence that dependent claim 5 is indefinite under 35 U.S.C. 112 ¶ 2, dependent claim 5 is unpatentable.

IV. ORDER

In consideration of the foregoing, it is

ORDERED that CME has shown by a preponderance of the evidence that claims 1–23 and 41–49 of the '419 patent are unpatentable;

FURTHER ORDERED that 5th Market's Motion to Amend is DENIED; and

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

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