United States District Court,
S.D. New York.

PAPYRUS TECHNOLOGY CORP,
Plaintiff.
v.
NEW YORK STOCK EXCHANGE, INC,
Defendant.

No. 04 CV 00625(JMB)

Sept. 11, 2008.

Background: Patentee brought infringement action against stock exchange, alleging infringement of patents related to wireless system capable of processing basic instructions handled by brokers on floor of stock exchange. Defendant sought claim construction.

Holdings: Following hearing, the District Court, Judith M. Barzilay, J., sitting by designation, held that:
(1) preamble of patent was not claim limitation subject to construction;
(2) phrase "current-status information," meant information indicating whether an instruction is pending or not pending;
(3) "calculating step" meant mathematically processing the current-status information to expressly determine a number of unfilled orders to be completed;
(4) term "data packet," meant data in binary form, including address and control elements;
(5) term "volley code" meant codes that define the present stage of a transaction or which reflect the progression of communications for a transaction; and
(6) term "execution" meant the consummation of a trade.

Claims construed.

5,915,245, 6,539,362. Cited.

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MEMORANDUM AND ORDER

JUDITH M. BARZILAY**, District Judge** FN***.**

FN* The Honorable Judith M. Barzilay, Judge, United States Court of International Trade, sitting by

designation.

I. Background

This is an action for patent infringement brought by Plaintiff Papyrus Technology Corp. ("Papyrus") against Defendant New York Stock Exchange, Inc. ("NYSE"). The parties appear before the court following NYSE's January 2005 request for a Markman Hearing. On December 18 and 19, 2007, the court held a Markman Hearing when the parties each gave a technology demonstration and presented their proposed constructions of the claim elements at issue. FN1 The court now construes disputed terms in Claim 1 of U.S. Patent No. 5,774,877, Claims 1 and 8 of U.S. Patent No. 5,797,002, and Claim 1 of U.S. Patent No. 6,768,981. *See* U.S. Patent No. 5,774,877 (issued June 30, 1998) ("the ' 877 Patent"); U.S. Patent No. 5,797,002 (issued Aug. 18, 1998) ("the ' 002 Patent"); U.S. Patent No. 6,768,981 (issued July 27, 2004) ("the ' 981 Patent").

FN1. The court derived its list of disputed terms from the parties' proposed claim-construction orders included in their briefs.

A. Procedural History

Papyrus filed suit against NYSE in January 2004, alleging infringement of the '877 Patent, the '002 Patent, U.S. Patent No. 5,915,245, and U.S. Patent No. 6,539,362 B2. *See* U.S. Patent No. 5,915,245 (issued June 22, 1999) ("the '245 Patent"); U.S. Patent No. 6,539,362 B2 (issued Mar. 25, 2003) ("the '362 Patent"). In March 2004, NYSE denied Papyrus's allegation and counterclaimed for a judgment of invalidity, non-infringement, and unenforceability of the '877, '002, '245, and '362 Patents, as well as for a declaration that there had been no breach of contract.

Papyrus filed a supplemental complaint in September 2004 alleging infringement of the '981 Patent. Following the conclusion of fact discovery in January 2005 and expert discovery in March 2005, the parties stipulated to the dismissal with prejudice of all claims relating to the '245 and '362 patents. *See Stipulation and Order of Dismissal, Papyrus Tech. Corp. v. N.Y. Stock Exch.,* No. 04 CV 00625 (S.D.N.Y. argued Dec. 18, 2007) (No. 68). At issue are the remaining three patents.

While conducting discovery, NYSE requested a Markman Hearing in January 2005. To determine whether a Markman Hearing would be necessary, the court ordered the parties to brief the claim-construction issues, which they completed in May 2005.FN2 The court held a two-day Markman Hearing in December 2007 regarding the disputed claim terms in the '877, '002, and ' 981 Patents. This order follows.

FN2. Because of the untimely death of Judge Richard C. Casey in March 2007, Chief Judge Kimba M. Wood ordered the parties to submit a joint statement of the case detailing the subject matter of the litigation and the relevant procedural history. The case was subsequently reassigned to Judge Sidney H. Stein on May 21, 2007. On July 17, 2007, Judge Stein overturned the April 2005 order of Magistrate Judge Dolinger striking the supplemental expert reports of Dr. Lee A. Hollaar. In addition, the court (a) held that Dr. Hollaar's reports from March 4 and March 7, 2005 would be permitted; (b) held that NYSE would be permitted to depose Dr. Hollaar regarding the information contained therein; and (c) scheduled a technology tutorial and Markman Hearing. Prior to the Markman Hearing, the Court reassigned the case to Judge Judith M. Barzilay, who held a status conference on October 17, 2007. The parties agreed to provide supplemental briefs updating information contained in the May 2005 claim-construction briefs and the July 2005 briefs alerting the court to the Phillips decision. *See generally* Phillips v. AWH Corp., 415 F.3d 1303 (Fed.Cir.2005).

II. Legal Background

[1] In a patent infringement action, the court applies a two-step process to determine whether infringement has occurred.FN3 *See* Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1115 (Fed.Cir.2004) (citing Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed.Cir.1995) (en banc), *aff'd,* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996)). The court must (1) determine the meaning and scope of the disputed patent claims, and (2) compare the properly construed claims to the accused device to determine whether there is infringement. Id. at 1115.

FN3. The relevant statute states that "whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent." 35 U.S.C. s. 271(a).

[2] [3] [4] [5] "[T]he construction of a patent, including terms of art within its claim, is exclusively within the province of the court." Markman v. Westview Instruments, Inc., 517 U.S. 370, 372, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996); *see* Aqua Prod., Inc. v. Intex Recreation Corp., No. 06 CV 1746, 2007 WL 1686518, at (S.D.N.Y. June 5, 2007). The court may utilize intrinsic and extrinsic evidence for guidance when construing a claim. *See* Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582-83 (Fed.Cir.1996). The

court must "look first to the intrinsic evidence of record, *i.e.*, the patent itself, including the claims, the specification and, if in evidence, the prosecution history." Id. at 1582; Markman, 52 F.3d at 979. Intrinsic evidence is "the most significant source of the legally operative meaning of disputed claim language," Vitronics Corp., 90 F.3d at 1582, because the patentee has chosen that language "to particularly point [ ] out and distinctly claim[ ] the subject matter which the patentee regards as his invention." Innova/Pure Water, Inc., 381 F.3d at 1116 (quotations omitted).

[6] [7] In general, claim terms are given their ordinary and customary meaning, *i.e.*, the "meaning that the term would have to a person of ordinary skill in the art in question ... as of the effective filing date of the patent application." Phillips, 415 F.3d at 1313. A "person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." Id.

[8] [9] [10] After the court considers the meaning of the claim terms, it must then review the specification to determine whether the patentee has used the terms in a manner inconsistent with their customary meaning. *See* Markman, 52 F.3d at 979. The specification is usually dispositive and "the single best guide to the meaning of a disputed term." Vitronics Corp., 90 F.3d at 1582; *see* Phillips, 415 F.3d at 1315-16. Although the specification is crucial to claim construction, the court must not read claims restrictively "unless the patentee has demonstrated a clear intention to limit the claim scope using 'words or expressions of manifest exclusion or restriction.' " Innova/Pure Water, Inc., 381 F.3d at 1117. Patentees may limit the scope of their claims, as they are free to use new terms or old terms with a different meaning than they ordinarily have in the particular art. *See* id. at 1116-17. However, any new or special definition given to a word must be clearly defined or implied somewhere in the specification so that anyone of ordinary skill in the art would know of the change from the original meaning of the term. *See* id. at 1117; Markman, 52 F.3d at 980.

[11] [12] [13] [14] [15] Finally, the court may also consider the patent's prosecution history. Markman, 52 F.3d at 980. The prosecution history is an important piece of intrinsic evidence in claim construction as its represents the public record of proceedings in the Patent and Trademark Office ("PTO"). *See* id.; Phillips, 415 F.3d at 1317. The prosecution history "consists of the complete record of the proceedings before the PTO and includes the prior art cited during the examination of the patent." Phillips, 415 F.3d at 1317. It demonstrates how the inventor and the PTO understood the meaning of the patent at the time of the proceedings. *See* id. However, as the prosecution history "represents an ongoing negotiation between the PTO and the applicant," and not the final product of the negotiation, "it often lacks the clarity of the specification and thus is less useful for claim construction purposes." Id. Nevertheless, the prosecution history often narrows the claim scope by "demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution ...." Id.

[16] [17] [18] In claim construction, courts are also authorized to utilize extrinsic evidence, which includes any evidence that is outside of the particular patent and its prosecution history, such as expert testimony, treatises and dictionaries. *See* Markman, 52 F.3d at 980. Although the court may relay on these sources to guide the claim construction, it must evaluate them within the context of the more authoritative intrinsic evidence. *See* Phillips, 415 F.3d at 1319. As a result, where "the public record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper." Vitronics Corp., 90 F.3d at 1583. Moreover, because the public is entitled to rely on the public record, the court may not allow it to be altered by extrinsic evidence introduced at trial. *See* id.; Markman, 52 F.3d at 980-81; Southwall Tech., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed.Cir.1995). Extrinsic evidence, therefore, "may be used only to help the court come to the proper understanding of the claims [and] may not be used to vary or contradict the claim language." Vitronics Corp., 90 F.3d at 1584.

III. Discussion

A. The Technology Described in the Patents

Although three individual patents are at issue in the current litigation, the '877, '002 and '981, they all share the same drawings and similar specifications. The specifications of the patents-in-suit describe a wireless system capable of processing the basic instructions handled by brokers on the floor of the exchange, including "quotation requests and quotations," "orders and executions, including a series of partial executions against a common, larger order," and "memos between the floor broker and a booth clerk or another floor broker." '877 Patent col.6 ll.34-37; *see* Pl. Tech. Demonstration ("TD") at 26. Papyrus's invention sets out a system which not only allowed communication between any booth clerk's computer and any broker's hand held device (HHD), but also allowed inter-HHD communication between brokers or a broker and a specialist, thereby bypassing the booth clerk's computer entirely. *See* Pl. TD at 28. More specifically, the invention allows the booth clerk to view the computer screen and monitor the progress of the brokers on the floor by "reviewing status information about the various stages of the quotes and orders and the leaves quantity for each order." Pl. TD at 37. The computer displays some information identifying the progression of a communication, thereby allowing the booth clerk "to know whether the broker has received and is working [on] the quote request or order." Pl. TD at 39. Additionally, the display contains status information "concerning the number of shares still needed to fill an order," which helps the clerk "assess a broker's workload by understanding how close the broker is to filling the pending orders." Pl. TD at 40.

Both the '002 and the '981 Patents explain methods which work in conjunction with the invention taught by the '877 Patent. In the '002 Patent, Papyrus explained the organizational arrangement known as a "data structure" that the device uses to process and keep track of the data packets comprising instructions. In particular, the preferred embodiment provides a pseudocode which defines the data structure and includes fields such as sequence number, transaction type, communication stage, stock being traded, buy or sell designation, quantity, and execution sequence number. Pl. TD at 63-64. The '981 Patent in turn discloses a method for executing a cross-trade in which the broker selects compatible orders-which are sorted and displayed so that the possible cross can be seen easily-and crosses them using the execution entry screen. Pl. TD at 55-59.

At issue in this case are Claim 1 of the '877 Patent, Claims 1 and 8 of the '002 Patent, and Claim 1 of the '981 Patent. The court will address the disputed language of each claim in turn.

B. The '877 Patent

Papyrus and NYSE contest the meaning of seven terms or elements in Claim 1 of the '877 Patent, which teaches "a method of managing the activities of one or more floor brokers situated on the floor of an exchange ...." '877 Patent Abstract. The method uses "a programmed computer to compare a relative number of instructions having a pending status that have been delegated to the floor brokers and find the floor broker having comparatively few pending instructions." Id. In its entirety, Claim 1 recites:

1. A method for managing one or more floor brokers situated on the floor of an exchange, comprising the steps of:

providing each floor broker with a two-way communications device;

transmitting an instruction from a programmed computer operated by an operator to the two-way communications device provided to a floor broker, the instruction being selected from the group consisting of quotations requests, quotations, orders, partial executions, and executions;

transmitting from each two-way communication device to the programmed computer current-status

information concerning any transmitting instructions;

calculating at the programmed computer a remaining quantity of unfilled orders to fill using current-status information transmitted to the programmed computer;

automatically and simultaneously displaying at the programmed computer in real time the current status information of at least a portion of the delegated instructions received from each two-way communication device; and

selecting a floor broker to whom a further instruction is to be transmitted.

'877 Patent col.32 ll.25-48.

1. "Managing one or more floor brokers"

[19] [20] [21] [22] The first disputed element is the phrase "managing one or more floor brokers," which appears in the preamble of Claim 1. '877 Patent col.32 l.25. In general, a preamble is an introductory statement which precedes, and does not limit, the body of the claim. *See* Allen Eng'g Corp. v. Bartell Indus., Inc., 299 F.3d 1336, 1346 (Fed.Cir.2002). "[I]f the body of the claim sets out the complete invention, and the preamble is not necessary to give life, meaning and vitality to the claim, then the preamble is of no significance to claim construction because it cannot be said to constitute or explain a claim limitation." Altiris, Inc. v. Symantec Corp., 318 F.3d 1363, 1371 (Fed.Cir.2003). Furthermore, a preamble is not limiting "where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention." Poly-Am., L.P. v. GSE Lining Tech., Inc., 383 F.3d 1303, 1310 (Fed.Cir.2004) (quotations & citation omitted).

[23] [24] [25] Alternately, "the preamble is regarded as limiting if it recites essential structure that is important to the invention or necessary to give meaning to the claim." Bicon, Inc. v. Straumann Co., 441 F.3d 945, 952 (Fed.Cir.2006). As a result, "when the limitations in the body of the claim rely upon and derive antecedent basis from the preamble, then the preamble may act as a necessary component of the claimed invention." Id., 441 F.3d at 952 (quotations & citation omitted). In determining whether the preamble constitutes a claim limitation, the court reviews the entire patent "to gain an understanding of what the inventors actually invented and intended to encompass by the claim." Poly-Am., L.P., 383 F.3d at 1309.

Papyrus contends that the preamble does not constitute a claim limitation because (a) the preamble does not recite essential structure or give life to the claim, (b) the six steps in the body of the claim define a fully operational method, and (c) deletion of the phrase would have no effect on the subsequent steps. Pl. Reply Br. 2-3. In the alternative, Papyrus asks the court to construe the phrase as "exercising care in assigning instructions to floor brokers." Pl. Proposed Claim Const. Order ("PCCO") 2. Specifically, Papyrus argues that the method enables the operator to determine which broker has the capacity to carry out the next order. Markman Hr'g Tr. vol. 1 at 79, *Papyrus Tech. Corp. v. N.Y. Stock Exch.,* No. 04 Civ. 00625 (S.D.N.Y. argued Dec. 18, 2007) ("Markman Hr'g Tr."). Further, Papyrus emphasizes that the calculating and displaying steps are the essential components of the claim, as they determine the information used by the booth clerk and make the information viewable at the programmed computer. Markman Hr'g Tr. vol. 1 at 84; Pl. Markman Hr'g Slide Presentation ("MHSP") vol. 1 at 8.FN4 Without this information, the booth clerk is unable to exercise his or her "judgment and discretion" in distributing new orders and quote requests.*See* ' 877 Patent col.9 ll.27-33. Crucially, the booth clerk does not direct or control how a floor broker handles a new order or quote request. Pl. MHSP vol. 1 at 16.

FN4. Plaintiff's MHSP consists of four individually-paginated volumes divided according to patent: the '877 Patent ("vol.1"), the '002 Patent ("vol.2"), the '981 Patent ("vol.3"), and the Additional Claim Elements

("vol.4").

In contrast, NYSE argues that the preamble constitutes a claim limitation and should be construed as "monitoring floor brokers' activities on the trading floor, and directing or controlling their workload." Def. PCCO 1-2. According to NYSE, the preamble limits the claim because Papyrus explicitly relied upon it during the patent prosecution. Def. Reply Br. 4; *see* In re Cruciferous Sprout Litigation, 301 F.3d 1343, 1347 (Fed.Cir.2002) ("Clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art may indicate that the preamble is a claim limitation ...."). NYSE alleges that the April 23, 1997 patent amendment demonstrates Papyrus's reliance on the preamble to differentiate the invention from the Sisley et al. ("Sisley") patent during prosecution. *See Amendment in Application Serial No. 08/309,377* (Apr. 23, 1997), Pl.App. Ex. 8 at 176, 178-79. NYSE also suggests that because the claims in the '877 Patent "are nothing more than lists of apparently unrelated activities" without the "managing" requirement of the preamble, the preamble is a fundamental characteristic of the invention and must therefore be treated as a claim limitation. Def. Reply Br. 4-5. The court does not agree.

During prosecution of the patent, Papyrus explained that "Claim [1] leaves the decision of who shall receive a further instruction in the discretion of the operator by 'enabling the operator to select a floor broker to whom a further instruction is to be delegated.' " FN5 *See* Pl.App. Ex. 8 at 183. Furthermore, that the April 1997 amendment repeatedly uses the terms "managing" or "management" does not necessarily constitute reliance on the preamble to differentiate the invention from the Sisley patent. *See* Pl.App. Ex. 8 at 176. FN6 Rather, taken as a whole, the amendment demonstrates Papyrus's efforts to rely on the claimed step of "receiving transmissions." Pl. MHSP vol. 1 at 11. Indeed, the amendment specifically states that

FN5. Some of the language in the proposed Claim 50 eventually formed part of Claim 1 in the '877 Patent.

FN6. In relevant part, the April 1997 amendment states that
[t]he claimed invention relates to managing one or more floor brokers that may be situated on the floor of an exchange .... The management method calls for the floor brokers being provided with two-way communication devices .... Such communication devices enable the managing method .... [to compare] a relative number of previously delegated instructions to the floor brokers which have a pending status so that the floor broker having comparatively few pending instructions can be found.

Pl.App. Ex. 8 at 176.
[b]ecause the field service technicians lack such communications devices, the management system of the [Sisley] patent does not teach or suggest the *claimed step of "receiving transmissions* from the two-way communication devices including status information concerning any instructions that have been delegated to the floor brokers." Pl.App. Ex. 8 at 178 (emphasis added). Papyrus again emphasized the claim's difference from the prior art, stating that the invention "includes steps that are not disclosed or suggested in either [Sisley] or the APAA. Specifically, the claimed method calls for ... *the step of receiving transmissions* from the two-way communication devices which include status information concerning any instructions that have been delegated to the floor brokers." Id. at 181 (emphasis added).
Finally, the court does not agree that the preamble is a fundamental characteristic of the claim. Because omission of the management phrase would affect neither the cohesiveness of the claim nor its ability to adequately describe the invention, the court finds that the preamble does not recite a central step, but rather, "sets the stage" for the invention. *See* Markman Hr'g Tr. vol. 1 at 87. Thus, for the aforementioned reasons, the court finds that the preamble is not a claim limitation.

2. "Current-status information"

[26] The parties ask the court to construe the phrase "current-status information," which appears multiple times in Claim 1 of the patent, including in the transmitting, calculating, and displaying steps. *See* '877 Patent col.32 ll.36, 39-40, 42-43.

Papyrus alleges that it acted as lexicographer by providing the following definition in the specification:

As used herein, "status" refers to the stage of the transaction, that is, whether a quotation has been received in response to a quotation request and whether an order has been completely filled. If the quotation has yet to be received, or an order remains unfilled, or only partially filled, the status is "pending."

'877 Patent col.9 ll.33-38. Based on this language, Papyrus suggests that "current-status information" means "information indicting whether an instruction is pending." Pl. PCCO 2; Pl. Br. 14.

According to Papyrus, the written description provides that several types of information may qualify as current status information: (1) volley codes indicating the order's stage; (2) a leaves quantity indicating the pending status of an order,FN7 and (3) volley codes indicating the request's stage. *See* ' 877 Patent col.9 ll.33-38, col.10 ll.17-21, col.18 ll.16-53, col.23 l.16-col.25 l.49. Further, Figure 1 in the ' 877 Patent illustrates several types of current-status information for quotation requests (symbols "Q," "A," "R," "S," and "U"), for orders (symbols " * " and "r"), and for leaves quantities (numeric values). ' 877 Patent Fig. 1.

FN7. Papyrus contends that a leaves quantity exemplifies current-status information in that a zero quantity indicates a completely filled order and a non-zero quantity denotes an unfilled or partially filled order.

Although NYSE also relies on the language of the specification, NYSE concludes that "current-status information" means "characters or digital means conveying the stage of a transaction." Def. PCCO 4; Def. MHSP 99. Specifically, NYSE relies on language stating that " 'status' refers to the *stage* of the transaction" and that the "system utilizes volley codes to define the present stage of the transaction or instruction." FN8 ' 877 Patent col.9 ll.33-34, col.18 ll.17-18 (emphasis added).

FN8. Although NYSE cites the '002 Patent col.10 ll.3-6 and col.18 ll.40-41, identical language appears in the '877 Patent at col.9 ll.33-34 and col.18 ll.17-18.

[27] [28] [29] When construing terms, the court generally "begin [s] with the presumption that the same terms appearing in different portions of the claims should be given the same meaning unless it is clear from the specification and prosecution history that the terms have different meanings at different portions of the claims." Fin Control Sys. Pty, Ltd. v. OAM, Inc., 265 F.3d 1311, 1318 (Fed.Cir.2001). Furthermore, "a claim term should be construed consistently with its appearance in other places in the same claim or in other claims of the same patent." Rexnord Corp. v. Laitram Corp., 274 F.3d 1336, 1342 (Fed.Cir.2001). Where "a patentee defines a claim term, the patentee's definition governs, even if it is contrary to the conventional meaning of the term." Honeywell Int'l., Inc. v. Universal Avionics Sys. Corp., 493 F.3d 1358, 1361 (Fed.Cir.2007). Indeed, "the specification is the single best guide to the meaning of a disputed term, and ... acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication." Phillips, 415 F.3d at 1321 (quotations & citation omitted).

In light of the case law and language in the specification, there are several issues that the court must balance in construing the term "current-status information." First, the court must adopt a construction consistent with the definition in the specification because Papyrus demonstrated an intent to act as lexicographer by defining the term "status." Second, the court is reluctant to adopt a construction, like that suggested by NYSE, which does not reflect the definition *in its entirety*. Crucially, the specification explains that "status"

is more than just the "stage of the transaction." The specification clearly states that instructions are either pending or not pending, *i.e.*, either a broker has not received a quotation or not completely filled an order, or the broker has carried out the instruction in its entirety. *See* '877 Patent col.9 ll.33-38. Third, because multiple types of information may denote the "status" of an instruction, *e.g.*, volley codes and leaves, the court must avoid a construction that overlaps the respective meanings of several terms or which uses terms to define each other.FN9 Fourth, because the specification uses "stage" to explain the meanings of the terms "status" and "volley codes," confusion may arise from a construction that employs the term "stage." ' 877 Patent col.9 ll.33-34, col.18 ll.17-18. Any construction of "status" must therefore make clear the subtle but important difference between "stage of the transaction" and the "stage" of an instruction as denoted by volley codes, such as whether an instruction has been sent, received, or cancelled.FN10 ' 877 Patent col.18 ll.16-53, col.23 ll.16-col.25 l.49. Thus, the court finds that "current-status information" means "information indicating whether an instruction is pending or not pending."

FN9. The court notes that NYSE's suggested construction for "current-status information" is markedly similar to its proposed definition for "volley codes." Def. PCCO 3-4. In addition, during oral argument NYSE argued that the "volley code defines the stage of the transaction." Def. MHSP 100. NYSE's proposed construction would in effect use the term "volley code" to define "status," thereby indicating that it is used for that function only.

FN10. For the full discussion and construction of the term "volley codes," see discussion *infra* part III(C)(4).

3. "Current-status information" in the Transmitting, Calculating, and Displaying Steps

[30] The court now turns to the patent's use of the phrase "current-status information" as it appears in the transmitting, calculating and displaying steps. *See* '877 Patent col.32 ll.36, 39-40, 42-43.

Papyrus asks the court to adopt a construction consistent with its argument that "the claim does not require that all transmitted current-status information be displayed at the programmed computer," but rather, that "the calculating step involves using *some* current-status information for calculating, and the displaying step, like the immediately preceding calculating step, involves using some current-status information." Pl. PCCO 2 (emphasis added). Papyrus's argument is two-fold. First, it contends that the specification language "do[es] not require that all transmitted current status information be displayed at the program[med] computer." Markman Hr'g Tr. vol. 1 at 136. Second, Papyrus argues that its construction encompasses the meaning of the term as used in each of the three steps. Pl. Reply Br. 7 (alleging that NYSE's construction, unlike Papyrus's, "would render the phrase 'to fill' superfluous."); *see* Digital Biometrics, Inc. v. Identix, Inc., 149 F.3d 1335, 1345 (Fed.Cir.1998) (holding that interpretations assigned to a term should encompass all uses of the word "because the same word appearing in the same claim should be interpreted consistently."). Alternately, NYSE contends that "the *same* 'current status information' indicating the stage of a transaction is both transmitted to the programmed computer and then displayed at the programmed computer." Def. PCCO 2 (emphasis added). In so claiming, NYSE alleges that the use of the word "the" preceding "current-status information in the displaying step means that the claim is referring back to the same current-status information mentioned in the transmitting step." FN11 Def. Reply Br. 9; *see* Process Control Corp. v. HydReclaim Corp., 190 F.3d 1350, 1356-57 (Fed.Cir.1999) (for proposition that identical language in separate clauses indicates same meaning); *Manual of Patent Examining Procedure* ("MPEP") s. 2173.05(e) (8th ed.2007) (for proposition that claim terms are indefinite unless they have an antecedent basis). In addition, at the Markman Hearing NYSE cited the April 1997 amendment during oral argument, where Papyrus stated that "[t]he operator's selection is informed by current-status information concerning any delegated instructions which is transmitted *to the programmed computer* by virtue of the 'transmitting' step

and automatically displayed by virtue of the 'displaying' step." Def. MHSP 103 (emphasis added); *see* Pl.App. Ex. 8 at 183. Further, NYSE conceded during oral argument that the claim "only requires some of the information to be on both screens simultaneously ...." Markman Hr'g Tr. vol. 1 at 141-42.

FN11. As an example, NYSE notes that the "R" character, a current-status code which indicates to the booth clerk that an "instruction has been received by the hardware device in his or her selected floor broker's hand," is first sent to the programmed computer and then displayed according to the steps in Claim 1. '877 Patent col.24 ll.3-8; *see* id. col.23 ll.53-62. However, NYSE ignores other "current-status information" that is transmitted from a handheld device but not displayed at the programmed computer, such as "ACK" and "TLC," messages indicating that changes can be made or that it is too late to cancel a message. *See* ' 887 Patent col.26 ll.49-col.27 l.7.

To construe this claim element, the court must determine the extent to which the current-status information displayed on the programmed computer is the same as that displayed on the hand-held device ("HHD"), *i.e.*, whether the programmed computer displays all or only some of the current-status information sent from the HHD. The court must look to the specification for guidance on this question. Phillips, 415 F.3d at 1315-16. There are several ways in which the preferred embodiment, which, although not limiting, is instructive on this issue. *See* '877 Patent Figs. 1, 7. First, a comparison of steps 324 and 328 of Figure 1 (the programmed computer) and steps 424 and 430 of Figure 7 (the HHD) shows that the booth clerk may view a greater amount of information in the "Quotes," "Orders," and "Reports" fields than is displayed on the floor broker's HHD. Specifically, the booth clerk may see sent, unsolicited, and archived orders (step 324) as well as information on any partial or cross-executions that fill a particular order (step 328). *See* id. at Fig. 1. Second, and crucially, following the calculating step, the programmed computer displays the leaves quantity in step 328-information which the HHD does not necessarily display. *See* id.; id. col.15 ll.49-51 (stating that the HHD display screen includes "a display button 438 for selectively hiding and displaying the unfilled portion (leaves) of an orders [sic] in box 430"). Third, in the preferred embodiment, the programmed computer displays only the current-status information of the broker *actively selected* in step 318. Even if the programmed computer displayed the same information in the "Quotes," "Orders," and "Reports" fields, the programmed computer as shown cannot simultaneously display the information of all the floor brokers.FN12 Id. As a result, NYSE's proposed construction would be correct (a) only as between the programmed computer and the HHD of the *selected* broker (according to the preferred embodiment), or (b) if the invention's programming language provided for the programmed computer to simultaneously display the current-status information of multiple brokers. NYSE's proposed construction is therefore too narrow to adequately describe the possible information displayed on the programmed computer. Def. PCCO 2.

FN12. Although the preferred embodiment clearly depicts that the programmed computer displays only the transmitted current-status information of the selected broker, "[i]t is a familiar axiom of patent law ... that the scope of a claim is not limited to the preferred embodiments described in the specification." Fuji Photo Film Co., Ltd. v. Int'l Trade Comm'n, 386 F.3d 1095, 1106 (Fed.Cir.2004). The Federal Circuit has "expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment." Phillips, 415 F.3d at 1323. While "an inventor may use the specification to intentionally disclaim or disavow the broad scope of the claim," the inventor's intention to do so must be clear. Conoco, Inc. v. Energy & Envtl. Int'l, L.C., 460 F.3d 1349, 1357 (Fed.Cir.2006); *see* Liebel-Flarsheim Co. v. Medrad, Inc., 358 F.3d 898, 906 (Fed.Cir.2004). Here, the inventor made no such disclaimer. Indeed, the specification states that "[w]hile the broker status section 304 has been described as a single section of the display screen 300, so that brokers may be serially monitored, the invention is not so limited. More than one broker status screen may be monitored at any one time, as understood by those skilled in the art." '877 Patent col. 10 ll.60-64.

For the aforementioned reasons, the court adopts Papyrus's construction and finds that (a) the claim does not require the programmed computer to display all the transmitted current-status information and (b) the calculating and displaying steps need only use *some* current-status information to carry out the patented method.

4. The Calculating Step

[31] The "calculating step" of Claim 1 states: "calculating at the programmed computer a remaining quantity of unfilled orders to fill using current-status information transmitted to the programmed computer." '877 Patent col.32 ll.38-40. Papyrus argues that in this step "the programmed computer uses some current-status information to mathematically determine the remaining quantity for each order that still needs to be filled, *i.e.,* the leaves quantity." Pl. PCCO 2. According to Papyrus, under its construction, "the calculating step provides information about the progress of each unfilled or pending order by determining the leaves quantity for each order." Pl. MHSP vol. 1 at 52. The focus of Papyrus's construction, therefore, is the unfilled *portion* within each individual order.

As support, Papyrus relies on the plain meaning of the phrase, the specification, and dictionary definitions. Pl. Br. 15-16. It first asserts that because the term "fill" modifies the phrase "a remaining quantity," the calculating step concerns a remaining quantity to fill for each of the unfilled orders. Pl. MHSP vol. 1 at 54. In addition, Papyrus contends that the phrase "calculating ... *a* remaining quantity of unfilled orders to fill" does not refer to the calculation of a single quantity, but rather, the calculation of the number of shares needed to fill each pending order. '877 Patent col.32 ll.38-40 (emphasis added); Pl. MHSP vol. 1 at 57-58; *see* KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1356 (Fed.Cir.2000) (construing the indefinite article "a" to mean "one or more").

With regard to the specification itself, Papyrus notes that the written description teaches that "the invention provides continuous information as to the handling of the transmitted instruction, that is, partial executions against orders, cancellations, and the like" resulting in the "clerk, manager, or investor [having] complete knowledge of the status of an order or quote request through the trading day." '877 Patent col.6 ll.55-61. Further, the preferred embodiment explains that the computer program processes incoming data packets by updating the record to indicate a new stage or status for the corresponding instruction. Id. col.29 ll.37-52. Once the programmed computer receives the data, the base station computer then uses the current-status information to mathematically determine the number of shares needed to fill each pending order. *See* '877 Patent col.10 ll.17-21, Fig. 1 step 328; Pl. MHSP vol. 1 at 58. Indeed, the specification notes that the leaves quantity is calculated for each execution or partial execution. *See* '877 Patent col.29 ll.43-44 ("the leaves must be amended to reflect the execution"), col.30 ll.54-57 ("the remaining quantity or leaves that must be traded to fill the order is calculated at step 860."), Fig. 17 at step 860.

Turning to extrinsic evidentiary support, Papyrus defines the term "calculating" according to its ordinary meaning of "to determine by mathematical processes." Pl. Br. 15; *see Webster's New Collegiate Dictionary* (9th ed.1988), Pl.App. Ex. 48 at 456; *Merriam-Webster's Collegiate Dictionary* (10th ed.2002), Pl.App. Ex. 49 at 480.

Alternately, NYSE construes the calculating step as "mathematically processing the current-status information to expressly determine a number of unfilled orders." Def. PCCO 2. In so proposing, NYSE argues that leaves are the number of shares remaining to be executed in a single order, while Claim 1 specifies calculating the remaining quantity of unfilled orders in the plural. Def. MHSP 113. NYSE contends that the only calculation the patent describes making before selecting a broker is the number of pending instructions. Def. MHSP 108. Specifically, it cites language in the specification stating that

[t]he determination of who among several floor brokers is best able to handle a further instruction may be

made, for example, *by comparing the relative number of instructions* having a pending status that have been delegated to the floor brokers, and finding the floor broker with a *comparatively few number of such instructions*.

'877 Patent col.9 ll.55-60 (emphasis added). The Abstract and Summary of the Invention recite a similar description. *See* id. at Abstract ("the method uses a programmed computer to compare a relative number of instructions having a pending status ... and find the floor broker having comparatively few pending instructions."); id. col.6 ll.64-col.7 l.4 ("[t]he method includes the steps of ... determining the one of the one or more floor brokers who is best able to handle a further instruction by comparing the relative number of reviewed delegated instructions having a *pending status* ....").

NYSE also relies on the prosecution history, where Papyrus's amendment to Claim 1 allegedly "changed the claim from one directed to calculating leaves to one directed to calculating the number of unfilled orders." Def. MHSP 112. While the calculating step in the original text states "calculating at the programmed computer *the remaining quantity that must be traded to fill a particular order* using the current-status information transmitted to the programmed computer concerning the particular order," the amended step states "calculating at the programmed computer *a remaining quantity of unfilled orders to fill* using the current-status information transmitted to the programmed computer." Pl.App. Ex. 11 at 202 (emphasis added). Papyrus's own amendment also describes that the "calculation" of the number of open orders assigned to each broker sets up the "selecting step." The amendment states that

the management method compares a relative number of previously delegated instructions to the floor brokers which have a pending status so that the floor broker having *comparatively few pending instructions* can be found. The method then selects or suggests that the found floor broker be the one to whom a further instruction is delegated.

Pl.App. Ex. 8 at 176 (emphasis added).

Accordingly, the court finds that neither party's proposed construction fully encompasses the meaning of the calculating step. On one hand, the specification makes clear that the booth clerk frequently receives current-status information, including leaves quantities. *See* '877 Patent col.10 ll.17-21, col.29 ll.40-44, col.30 ll.54-57 & Fig. 1 step 328. Moreover, the specification clearly defines "leaves" as "the unfilled portion (leaves) of an orders [sic]," and as a quantity "which advises the broker of the quantity of stock required to be traded to fill the order." FN13 ' 877 Patent col.15 ll.50-51, col.16 ll.55-57. On the other hand, the specification and prosecution history contain language suggesting that the calculating step involves a comparison of unfilled orders. *See* ' 877 Patent Abstract, col.6 ll.64-col.7 l.4, col.9 ll.55-60; Pl.App. Ex. 8 at 176, Ex. 11 at 202. During the Markman Hearing, Papyrus conceded that the clerk can compare the relative number of pending instructions through visual observation. Pl. MHSP vol. 1 at 64. Furthermore, in its discussion of the selecting step, Papyrus again stated that: "[t]he specification explains that a clerk may compare the relative number of pending instructions just by looking at lists of pending instructions for different brokers." Pl. MHSP vol. 1 at 73; *see* ' 877 Patent col.9 ll.24-27. The court must therefore settle on a construction of the calculating step that encompasses both leaves and the relative number of unfilled orders. *See* Merck & Co., Inc. v. Teva Pharm. USA, Inc., 395 F.3d 1364, 1372 (Fed.Cir.2005) ("[a] claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so."). Accordingly, the court construes the calculating step to mean "mathematically processing the current-status information to expressly determine a number of unfilled orders to be completed."

FN13. Even though the definition of "leaves" appears in reference to the HHD, the court must apply the same definition to the term in its use throughout the patent, as "a claim term should be construed consistently with its appearance in other places in the same claim or in other claims of the same patent." Rexnord Corp., 274 F.3d at 1342.

5. The Displaying Step

[32] The "displaying step" of Claim 1 provides as follows: "automatically and simultaneously displaying at the programmed computer in real time the current status information of at least a portion of the delegated instructions received from each two-way communication device." '877 Patent col.32 ll.41-45.

Papyrus suggests that the court construe the step as meaning "the simultaneous display at the programmed computer of some current-status information for one instruction and some current-status information for another instruction." Pl. PCCO 2. In effect, Papyrus focuses on the *content* of the information displayed on the programmed computer and relies primarily on the language in the specification. Pl. MHSP vol. 1 at 25-28. For example, although the claim language itself expressly references the programmed computer as the display location of the current-status information, it makes no reference to displaying on the floor broker's HHD. *See* '877 Patent col.32 ll.41-45. In addition, the Abstract also discusses displaying current-status information at the programmed computer. '877 Patent Abstract ("A related method enables an operator to delegate instructions ... by receiving *at the operator's computer* current-status information on any delegated instructions and automatically displaying that information *at the computer*." (emphasis added)). In addition, Papyrus contends that the displaying step requires only the "simultaneous display of current-status information for at least two instructions at the programmed computer." Pl. MHSP vol. 1 at 25.

NYSE, however, asks the court to define this step to mean "the current-status information is displayed both on the programmed computer and the two-way communication device at the same time." Def. PCCO 2. Despite Papyrus's argument that the claim language does not make any reference to a display on the HHD, NYSE asserts that the current-status information is displayed simultaneously on the broker's device and the programmed computer. Markman Hr'g Tr. vol. 1 at 123-124. Relying on the prosecution history,FN14 NYSE argues that the Interview Summary, memorializing the September 3, 1997 interview between Papyrus and the examiner, is evidence of Papyrus's "deal to induce the examiner to issue the patent." Def. MHSP 91; *see* Pl.App. Ex. 11 at 201. In stating that the "[p]roposed claim so differs over prior art in the 'automatically [and] simultaneously displaying' of information in real time *both on the floor broker's display and the booth operator['s] display,*" the Interview Summary allegedly "[leaves] no doubt as to what it [is] that [is] being 'simultaneously' displayed." Pl.App. Ex. 11 at 201 (emphasis added); Def. Br. 16. NYSE also cites the Notice of Allowability, where the examiner stated that "[i]ndependent claim 50 has been amended to clearly recite the features of 'automatically and simultaneously displaying' information in real-time *both on the floor broker's display and the booth operator['s] display,* which features were not apparent in the prior art of record." *Notice of Allowability in Application Serial No. 08/309,337* (Sep. 19, 1997), Pl.App. Ex. 14 at 212 (emphasis added). At the Markman Hearing, NYSE again emphasized the importance of the Interview Summary, claiming that the "examiner acts as a scrivner [at the interview], but [the parties] decide together what to put in the form and a personal copy is given to the applicant right then and there, so this is not a unilateral action of the patent examiner. This is the agreement that was reached between the applicant and the examiner." Markman Hr'g Tr. vol. 1 at 125. Therefore, NYSE argues that the phrase requires simultaneous display on both the HHD and the programmed computer. Def. Reply Br. 17.

FN14. During the course of prosecution, Papyrus submitted amendments in June 1995 and April 1997. *Preliminary Amendment in Application Serial No. 08/309,337* (June 20, 1995), Pl.App. Ex. 5; Pl.App. Ex. 8. Papyrus first included the language that would eventually become the displaying step in April 1997. *See* Pl.App. Ex. 8 at 174 ("automatically displaying at the programmed computer the current status information of the delegated instructions"). Following the PTO's rejection of Claim 50 as "being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention," Papyrus met with a PTO examiner for an interview. *Office Action in Application Serial No. 08/309,337* (July 9, 1997), Pl.App. Ex. 10 at 190; *see Interview Summary in Application Serial No. 08/309,337* (Sep. 3,

1997), Pl.App. Ex. 11. The September 8, 2007 amendment is the first time that the phrase "automatically and simultaneously" appeared in the patent. *Rule 1.116 Amendment in Application Serial No. 08/309,337* (Sep. 8, 1997), Pl.App. Ex. 12 at 206.

[33] [34] [35] To construe the displaying step, the court must therefore determine whether the examiner's statements reflect express representations made by Papyrus, or whether the statements are evidence of unilateral action on the part of the examiner. Although the prosecution history is intrinsic evidence that aids the court in claim construction, it "cannot enlarge, diminish, or vary the limitations in the claims." Markman, 52 F.3d at 980 (quotations omitted). The prosecution history includes "all express representations made by or on behalf of the applicant to the examiner to induce a patent grant," as well as amendments to the claims and arguments made to convince the examiner. Standard Oil Co. v. Am. Cyanamid Co., 774 F.2d 448, 452 (Fed.Cir.1985). "Arguments made during the prosecution of a patent application are given the same weight as claim amendments," and both give rise to prosecution history estoppel. ElkayMfg. Co. v. EBCO Mfg. Co., 192 F.3d 973, 979 (Fed.Cir.1999). Although "an examiner's reasoning and findings are highly relevant to the validity inquiry ... they are not beyond challenge and they do not in every case automatically preclude the existence of a dispute of material fact." TorPharm, Inc. v. Ranbaxy Pharm., Inc., 336 F.3d 1322, 1329 (Fed.Cir.2003). Because the Federal Circuit "has recognized that an Examiner's Statement of Reasons for Allowance 'will not necessarily limit a claim'," an applicant's "silence regarding statements made by the examiner during prosecution, without more, cannot amount to a 'clear and unmistakable disavowal' of claim scope." Salazar v. Procter & Gamble Co., 414 F.3d 1342, 1345 (Fed.Cir.2005) (quoting 3M Innovative Props. Co. v. Avery Dennison Corp., 350 F.3d 1365, 1373-74 (Fed.Cir.2003)). Consequently, "the applicant has no obligation to respond to an examiner's statement of Reasons for Allowance, and the statement of an examiner will not necessarily limit a claim." Eolas Tech. Inc. v. Microsoft Corp., 399 F.3d 1325, 1337-38 (Fed.Cir.2005) (quotations omitted); *see* ACCO Brands, Inc. v. Micro Sec. Devices, Inc., 346 F.3d 1075, 1079 (Fed.Cir.2003). Nevertheless, an applicant or patent owner may commit to a particular meaning for a patent term "through statements made during prosecution" which are then "binding in litigation." CVI/Beta Ventures, Inc. v. Tura LP, 112 F.3d 1146, 1158 (Fed.Cir.1997). Further, "the public is entitled to equate an inventor's acquiescence to the examiner's narrow view of patentable subject matter with abandonment of the rest. Such acquiescence may be found where *the patentee narrows his or her claims by amendment*." TorPharm, Inc., 336 F.3d at 1330 (emphasis added).

[36] Here, Papyrus contends that (a) the examiner mischaracterized the displaying step in both the interview summary and the Statement of Reasons for Allowance, and (b) the "automatic and simultaneous display" language was all that was needed to circumvent the prior art. Pl. Reply Br., 5. The court agrees. The record shows no evidence that Papyrus sought to limit the claim in such a way. Neither the proposed Claim 50 (now Claim 1) language attached to the Interview Summary nor the proposed language in the September 8, 1997 amendment contains any reference to information being simultaneously displayed on both the HHD and the programmed computer. *See* Pl.App. Ex. 11 at 202; Pl.App. Ex. 12 at 206.FN15 Indeed, the phrase "both on the floor broker's display [and] the booth operator['s] display" appears only in documents issued by the examiner. Pl.App. Ex. 11 at 201; *see* Pl.App. 14 at Ex. 212. Moreover, the text of the amendment, which represents the arguments that Papyrus made to convince the examiner and induce the patent grant, makes no reference to the displaying of current-status information on the HHD. Papyrus therefore did not seek to induce a patent grant based on the content displayed on the HHD, as NYSE alleges. *See* Standard Oil Co., 774 F.2d at 452. In discussing the real-time nature of the invention in connection with the current-status information, Papyrus specifically stated that "[i]nsofar as the Examiner indicated in the Interview Summary that the automatic and simultaneous display of information in real-time differs over the art of record, the inclusion of the calculating step should not negate allowability." Pl.App. Ex. 12 at 207. Addressing the prior art, the amendment also states that "[t]he [Sisley] patent does not teach the provision of two-way devices nor does it teach the use of, or access to, current-status information as called for in the pending claims. These features provide the *operator of the programmed computer* with a distinct advantage over prior art schemes

...." Pl.App. Ex. 12 at 208 (emphasis added); *see Method and Resource Assignment and Scheduling,* U.S. Patent No. 5,467,268 Abstract (issued Nov. 14, 1995), Pl.App. Ex. 71 at 917.FN16 Because the record evidence shows that Papyrus repeatedly proposed consistent language which made no reference to the HHD display, the examiner's statements were unilateral and therefore do not limit the claim. *See* Salazar, 414 F.3d at 1345-46. Furthermore, that Papyrus did not respond to the examiner's statements does not indicate acquiescence to the examiner's interpretation, particularly since the language of the September 8, 1997 amendment does not support the examiner's written statements. *See* Eolas Tech. Inc., 399 F.3d at 1337-38. For these reasons, the court construes the displaying step as meaning "the current status information for one instruction and some current-status information for another instruction *may* be simultaneously displayed."

FN15. As stated in the September 8, 1997 amendment, the displaying step requires: "automatically and simultaneously displaying *at the programmed computer* in real time the current status information of at least a portion of the delegated instructions received from each two-way communication device." Pl.App. Ex. 12 at 206 (emphasis added).

FN16. As a corollary, Papyrus argues that there is no need for HHD to display the same information as the programmed computer because the floor brokers do not need to know the current-status information of the instructions issued to other brokers. Markman Hr'g Tr. vol. 1 at 116. Furthermore, displaying the current-status information of other brokers at the HHD would not help the booth clerk distribute new instructions to the floor brokers. Pl. MHSP vol. 1 at 37.

6. The Selecting Step

[37] For the purposes of claim construction, the "selecting step" is defined as: "selecting a floor broker to whom a further instruction is to be transmitted." '877 Patent col.32 ll.46-47. Papyrus suggests that the selecting step means "choosing a floor broker to whom another instruction will be sent." Pl. PCCO 2. Papyrus argues that the selecting step does not require that the choice of floor broker be based on current-status information or on the number of unfilled orders, and thus, no such limitation should be read into the claim. Pl. Br. 19. Rather, the booth clerk's selection could be based on either the calculating step, the displaying step, or both. Pl. MHSP vol. 1 at 69. Because the invention provides that the programmed computer display the broker status and that the booth clerk "can monitor the progress of one or more of the floor brokers," the clerk's review of the status information may occur as a result of the displaying step, but not necessarily so. '877 Patent col.10 ll.2-5; *see* id. col.9 ll.24-27. In addition, Papyrus also cites dictionary definitions to support its construction, noting that "select" means "to take preference from a number or group: to pick out: choose." Pl. Br. 19; *see* Pl.App. Ex. 48 at 473; Pl.App. 49 at 497.

On the other hand, NYSE proposes the following definition for the step: "the operator selects, based on the displayed current status information and number of unfilled orders calculated above using current status information, the identity of a floor broker to whom a further instruction is to be transmitted." Def. PCCO 2. NYSE relies on the patent specification to argue that broker selection depends on the current-status information and the quantity of pending instructions. For example, the Abstract explains that "the method uses a programmed computer to *compare a relative number of instructions* having a pending status ... and *find the floor broker* having comparatively few pending instructions." '877 Patent Abstract (emphasis added). Similarly, the body of the specification explains that

[t]he determination of who among several floor brokers is best able to handle a further instruction may be made, for example, *by comparing the relative number of instructions* having a pending status that have been delegated to the floor brokers, and *finding the floor broker* with a comparatively few number of such instructions.

Id. col.9 ll.55-60 (emphasis added). In addition to the patent language, NYSE also relies on the prosecution history to buttress its argument. Specifically, NYSE argues that Papyrus overcame the prior art by emphasizing a selection process in which brokers with a comparatively smaller number of pending instructions were selected based on status information received at the programmed computer. Def. Br. 23; Def. MHSP 117. The April 23, 1997 amendment states that "[t]he operator's selection is *informed by current-status information* concerning any delegated instructions which is transmitted to the programmed computer by virtue of the 'transmitting' step and automatically displayed by virtue of the 'displaying' step." Pl.App. Ex. 8 at 183. Further, the September 8, 1997 amendment emphasized that "[t]he real time nature of the claimed invention was stressed [by Papyrus] in the record in connection with the claimed 'current-status' information, *as informing the operator's selection* of a floor broker to whom a further instruction is to be transmitted." Pl.App. Ex. 12 at 207. Finally, NYSE notes that inventor Mr. L. Thomas Patterson answered affirmatively when asked during his deposition whether "[the person] managing the floor brokers, [is] making the selection based on the display that is recited in the previous step [*i.e.,* the displaying step]." *L. Thomas Patterson Dep.,* Murray Decl. Ex. 18 at 155; Def. MHSP 118.

In light of this evidence, the court disagrees with Papyrus's contention that the selecting step need not be based on current-status information. The intrinsic evidence stands in sharp contrast to Papyrus's proposed construction, and clearly explains that operator's selection is informed by the current-status information. The court therefore construes the selecting step as "the operator selects, based on the displayed current status information and number of unfilled orders calculated above using current status information, the identity of a floor broker to whom a further instruction is to be transmitted."

7. "Transmitting" and "Transmitting ... from [one device] to [another device]"

[38] The final element of Claim 1 that the court must construe is the transmitting step, which states: "transmitting from each two-way communication device to the programmed computer current-status information concerning any transmitted instructions." '877 Patent col.32 ll.35-37. Papyrus proposes that the term "transmitting" means "sending from one place to another," and that the phrase "transmitting ... from [one device] to [another device]" means "sending from one device to another device." Pl. PCCO 3. Papyrus argues that transmissions from the handheld devices do not travel directly to the base-station computer, but instead require some "intermediate storage or processing" within the network bridge. Pl. Reply Br. 12. In so claiming, Papyrus notes that the specification discloses various radios, bridges, and routers to provide a wireless communication link to the programmed computer. Pl. Reply Br. 11; Markman Hr'g Tr. vol. 2 at 5. For example, the patent states that "the wireless transmission occurs within the four walls of the exchange to one or more of the radio bridges that are connected to the backbone [Local Area Network] ...." '877 Patent col.25 ll.61-63. The patent also states that "Proxim RangeLan 1 and 2 Spread Spectrum radios are connected to these machines and to Proxim Access Point Wireless Ethernet Bridges to provide the wireless communication link" and that "Cisco Routers are used to tie the inventive system into the network of the stock market exchange." '887 Patent col.8 ll.34-39; Markman Hr'g Tr. vol. 2 at 5.

Papyrus also cites extrinsic evidence, noting that the word "transmit" means "to send or convey from one person or place to another" and "to send out (a signal) either by radio waves or over a wire." Pl.App. Ex. 48 at 475; Pl.App. Ex. 49 at 500. Based on the dictionary definitions, Papyrus alleges that there is no requirement for direct transmission without intermediate processing or storage, as commonly understood. Pl. MHSP vol. 1 at 81.

NYSE, however, contends that the specification contains no disclosure regarding the sending of signals to some intermediate device between the first device and the second device. Def. Br. 24. As a result, NYSE ask the court to construe the term and phrase as meaning "directly sending between the identified devices without use of an intermediate network." Def. PCCO 3. Specifically, NYSE seeks to distinguish between

transmission from the HHD to the programmed computer and communication from the programmed computer to the network system. According to NYSE, when the patent refers to a router and a network, it describes the connection between the booth clerk back into the network system, and the router is only involved when there is communication with entities other than the booth clerk and the floor brokers. *See* Markman Hr'g Tr. vol. 2 at 14-15. In contrast, NYSE alleges that phrase "direct transmission" refers to "data packet[s] fly[ing] directly from one computer to the other." Id. at 17. Moreover, in direct transmission, the data packet does not go back into the network through the router. Id.

To support its position, NYSE relies on both the patent language and the prosecution history. In citing the specification, NYSE repeatedly emphasizes the phrase "from a first device to a second device." *See* ' 877 Patent col.6 ll.42-43. The specification also states that "[a]ll data packets that are to be transmitted, either from the [base station] or the HHD, are handled by the routine illustrated in Fig. 15." Id. col.28 ll.2-4. Because the data packet is "placed in [the] outbound queue" in step 740 and is transmitted in step 742, NYSE alleges that there is no discussion of indirect transmission in the preferred embodiment. Def. Br. 25.

With regard to the prosecution history, NYSE argues that Papyrus defined the "transmitting" term and phrase during prosecution of the '362 Patent, which issued from the same initial application as the '877 Patent. Def. Br. 25; Def. MHSP 121. NYSE also alleges that "Papyrus amended its claims to expressly recite direct transmission ... [by] add[ing] language that called for transmitting a data packed from a first individual to a second floor broker." Markman Hr'g Tr. vol. 2 at 18. Further, the prosecution history would lead a competitor to reasonably believe that Papyrus had disavowed indirect data transmissions, and therefore function as a disclaimer. Def. Br. 27; *see* Omega Eng'g, Inc., v. Raytek Corp., 334 F.3d 1314, 1324 (Fed.Cir.2003) ("As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic evidence and protects the public's reliance on definitive statements made during prosecution.").

[39] [40] " 'When multiple patents derive from the same initial application, the prosecution history regarding a claim limitation in any patent that has issued applies with equal force to subsequently issued patents that contain the same claim limitation.' " Biovail Corp. Intl. v. Andrx Pharm., Inc., 239 F.3d 1297, 1301 (Fed.Cir.2001) (quoting Elkay Mfg. Co., 192 F.3d at 980). In addition, "a statement made by the patentee during prosecution history of a patent in the same family as the patent-in-suit can operate as a disclaimer." Verizon Servs. Corp. v. Vonage Holdings Corp., 503 F.3d 1295, 1306 (Fed.Cir.2007).

In this case, during the prosecution of the '362 Patent, Papyrus specifically explained the process of direct transmission in order to overcome prior art.FN17 *See* Pl.App. Ex. 32 at 314. Following the June 7, 2001 amendment, the PTO examiner rejected the application because "the features upon which applicant relies (*i.e.,* direct transmissions from one floor broker to another) are not recited in the rejected claim(s)." *Office Action in Application Serial No. 09/668,184* (Aug. 27, 2001), Pl.App. Ex. 34 at 325. Papyrus again amended the patent application to expressly recite direct transmission. *See Amendment in Application Serial No. 09/668,184* (Feb. 21, 2002), Pl.App. Ex. 35 at 328 ("transmitting the data packet from the first device to the assigned network address of the second handheld device"). To explain its proposed changes, Papyrus stated that "[t]he amendments to [C]laim 7 directly address the arguments in Applicants' prior Amendment since the amended [claim] expressly recites direct transmissions from one individual to another." Pl.App. Ex. 35 at 331. The examiner subsequently concluded that the closest prior art discloses a method of order management which fails to anticipate or render obvious the direct transmission from HHD to HHD. Pl.App. Ex. 37 at 340-41.

FN17. The amendment states that:
[t]he claimed arrangement enables direct data transmission between and among floor brokers .... In contrast, Gutterman et al. has all data transmissions directed through the same electronic order entry system and provides no flexibility to allow direct data transmissions from one floor broker to another.

Amendment in Application Serial No. 09/668,184 (June 7, 2001), Pl.App. Ex. 32 at 314 (emphasis added).

Although NYSE is correct in noting that the '362 Patent used "transmitting" to mean direct communication between HHDs, the prosecution of the '362 Patent Claim 7 does not limit the '887 Patent Claim 1 because the two claims use different language. Ventana Med. Sys., Inc. v. Biogenex Lab., Inc., 473 F.3d 1173, 1184 (Fed.Cir.2006) (suggesting that statements made by inventor during continued prosecution of related patent application should not limit claim scope where patent-in-suit includes different claim language than later-prosecuted claim). The latter does not require direct transmission between two HHDs, but rather, transmission from a programmed computer to a HHD and from a HHD back to the programmed computer. *See* '877 Patent col.32 ll.29-31, ll.35-36. Given the different language in the claims, it would be inconsistent to apply the same construction to the term "transmitting" as it appears in the two patents. Moreover, because the claim language does not require direct transmission and because the specification calls for the use of radios and ethernet bridges, the court may not adopt a construction that builds in or precludes direct transmission. *See* '887 Patent col.8 ll.34-39; Fuji Photo Film Co., 386 F.3d at 1106. Accordingly, the court finds that both the term "transmitting" and the transmitting step mean "sending from one place to another."

C. The '002 Patent

The '002 Patent discloses a data structure for use in a two-way wireless system for processing equity trades and the like. *See* '002 Patent Abstract. Claims 1 and 8 of the '002 patent are disputed in the present action. Claim 1 recites:

1. In a system for processing one or more executions against an order, a local computer-readable memory for storing data for access by an application program being executed on a two-way wireless system, comprising:

a data structure stored in said local computer-readable memory, said data structure including information used by said application program and including:

a plurality of data packets stored in said local computer-readable memory, each of said data packets containing said information and further containing a sequence code and a volley code, said sequence code associating a subset of said plurality of data packets together and said volley code defining a hierarchical relationship among said subset of data packets;

an order data packet being one of said subset of data packets and having one hierarchical level;

at least one execution data packet being another of said subset of data packets and having another hierarchical level, said at least one execution data packet having a many-to-one relationship with said order data packet, each of said at least one execution data packet being defined by a uniquely assigned execution sequence number, said execution sequence number being assigned by said application program.

'002 Patent col.33 ll.26-48. Furthermore, Claim 8 of the '002 Patent states:

8. A two-way wireless system for processing one or more executions against an order, comprising:

a first computer running a first application program that generates sequence codes and volley codes, said

volley codes being related to the stage of processing of the order, said first computer having a computer-readable memory for storing data;

a second computer running a second application program that generates volley codes, said second computer having a computer-readable memory for storing data;

a data structure stored in each of said computer-readable memories, said data structure including information which is accessible by each of said first and second application programs and including:

a plurality of data packets stored in said computer-readable memories, each of said data packets containing information and further containing a sequence code and a volley code, said sequence code associating a subset of said plurality of data packets together and said volley code defining a hierarchical relationship among said subset of data packets;

an order data packet being one of said subset of data packets and having one hierarchical level;

at least one execution data packet being another of said subset of data packets and having another hierarchical level, said at least one execution data packet having a many-to-one relationship with said order data packet; and

a wireless communications link between said first and second computers which is selectively established to enable transmission of said data packets therebetween.

'002 Patent col.34 ll.9-39.

1. "Data packet"

[41] With regard to Claim 1 of the '002 Patent, the parties request that the court begin by construing the term "data packet," which appears throughout the text of the claim.FN18 Papyrus contends that the term "data packet" means "a unit of data sent across or over a network," a definition consistent with the varied use of the term in the written description of the patent. Pl. PCCO 3; Pl. Br. 22, 24; Markman Hr'g Tr. vol. 2 at 23. According to Papyrus, because the written description employs the term "data packet" in various contexts, the term denotes different units of data at different points in the communication process. Pl. Br. 24. For example, Papyrus argues that "data packet" refers to (a) an execution report, ' 002 Patent col. 17 ll.47-51; (b) a unit of data containing a broker identification number, id. at Fig. 14 step 720; (c) a transmission packet, id. at Fig. 15 step 740; and (d) a network packet, id. at Fig. 16 step 782. In addition, Papyrus also argues that a data packet may not necessarily be ready for transmission. Markman Hr'g Tr. vol. 2 at 31. As Figure 14 shows, it is only when the data packet is ready for transmission that the device adds a broker identification number to the packet so that it can be addressed to the broker. *See* ' 002 Patent Fig. 14 step 720. That step 738 of Figure 15 also shows the addition of address information to an outbound packet also indicates that the packet does not necessarily contain address information at all times. *See* ' 002 Patent Fig. 15 step 738.

FN18. Although they propose different constructions, the parties agree that "data packet" and "packet" are synonymous. Pl. MHSP vol. 2 at 4.

NYSE proposes a definition in which "data packet" is construed as "a group of binary digits, including data and control elements." Def. PCCO 3. During oral argument, NYSE maintained that the minimum unit of data that can be transmitted necessarily includes address information. Def. MHSP 135. To illustrate this point, NYSE analogized data to the contents of a letter and "data packet" to the envelope and letter together, where the letter cannot be delivered if the envelope has no address. Id. at 136; Markman Hr'g Tr. vol. 2 at

[42] Because neither party cites a portion of the patent specification or the prosecution history to support its arguments, the court is left with the task of construing an ambiguous term. Where ambiguity surrounds a term in the patent, the court may employ extrinsic evidence, such as dictionary definitions to guide its analysis. *See* Vitronics Corp., 90 F.3d at 1583. In this case, Papyrus relies on several dictionary definitions of "packet" to support its position. *See Comprehensive Dictionary of Electrical Engineering* (1st ed. 1999) ("*EE Dictionary*"), Pl.App. Ex. 53 at 521 ("a unit of data which is sent over a network"); *Free On-Line Dictionary of Computing* (1993), Pl.App. Ex. 54 at 520 ("[t]he unit of data sent across a network"); *Newton's Telecom Dictionary* (8th ed.1994), Pl.App. Ex. 52 at 516 ("[a] bundle of data, usually in binary form, organized in a specific way for transmission"); *Internet User's Glossary* 37 (1993), Pl.App. Ex. 55 at 522 ("a unit of data sent across a network"); Anchor Wall Sys., Inc. v. Rockwood Retaining Walls, Inc., 340 F.3d 1298, 1308 (Fed.Cir.2003) (holding that "varied use of a disputed term in the written description attests to the breath of a term rather than providing a limiting definition.").

NYSE, in contrast, cites only to *The New IEEE Standard Dictionary of Electrical and Electronic Terms* (5th ed.1993) ("*5th IEEE Dictionary*"), which defines "packet" as "[a] group of binary digits including data and control elements which is switched and transmitted as a composite whole." FN19 Pl.App. Ex. 56 at 530.

FN19. "IEEE" refers to the Institute of Electrical and Electronics Engineers, Inc. *See* Pl.App. Ex. 56 at 524.

Papyrus challenges NYSE's choice of dictionaries, arguing that the court should instead consider *The IEEE Standard Dictionary of Electrical and Electronics Terms* (6th ed.1997) ("*6th IEEE Dictionary*"), which defines "packet" as "a group of binary digits including data and control elements which is switched and transmitted as a composite whole" where "[t]he data and control elements and possibly error control information are arranged in a specified format." Pl.App. Ex. 57 at 541. Papyrus claims that NYSE's definition from the fifth edition is "narrow" and "context-dependent" on the facsimile field, based on its reference to standard # 168-1956, which was limited to the facsimile field and later withdrawn.FN20 Pl. Br. 23.

FN20. The definition contained in the *5th IEEE Dictionary* evolved from the IEEE standard # 168-1956, addressing the facsimile field. The record contains the 1972 version of the standard, which is titled "Definitions of Terms on Facsimile." *IEEE Standard 168-1956: Definitions of Terms on Fascimile,* Pl.App. Ex. 58. The IEEE withdrew standard 168-1956 in 1990. *See* http:// ieeexplore. ieee. org/ x pl/freeabs_all.jsp? tp= & isnumber =1170 & arnumber=28994 & punumber=2743 (last visited Aug. 19, 2008).

[43] While the origins of the definition arguably do not apply to the field at hand, the court may still consider the IEEE definition during its claim construction. The court need only consider those dictionary definitions that were "publicly available at the time the patent is issued," as they will be "reliable sources of information on the established meanings that would have been attributed to the terms of the claims by those of skill in the art." Texas Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1203 (Fed.Cir.2002). That the definition specifically includes the parenthetical "data communication," also suggests that the definition applies in *all* data communication contexts, not just those related to facsimiles. *See* Pl.App. Ex. 56 at 530.

Even if the IEEE definition did not apply in this context because of its origins, Papyrus's other dictionary sources also indicate that a data packet contains address and control elements. For example, in its entirety, *Newton's Telecom Dictionary* defines "packet" as

[a] bundle of data, usually in binary form, organized in a specific way for transmission. Three principal

elements are included in the packet: 1. *Control information-destination, origin,* length of packet, etc., 2. the data to be transmitted and 3. Error detection and correction bits.

Pl.App. Ex. 52 at 516 (emphasis added). Similarly, the complete definition in the *EE Dictionary* states that a "packet" is "a unit of data which is sent over a network. A packet comprises a payload containing some data, and either a header or a trailer containing *control information*." Pl.App. Ex. 53 at 521 (emphasis added).

[44] [45] "[B]ecause words often have multiple dictionary definitions ... the intrinsic record must always be consulted to identify which of the different possible dictionary meanings of the claim terms in issue is most consistent with the use of the words by the inventor." Texas Digital Sys., Inc., 308 F.3d at 1203. Should "more than one dictionary definition [be] consistent with the use of the words in the intrinsic record, the claim terms may be construed to encompass all such consistent meanings." Id. Taking into consideration the patent specification and the multiple definitions cited, the court construes the phrase as "data in binary form, including address and control elements."

2. "Data structure"

[46] The parties also request that the court construe the meaning of the data structure limitation as it appears in Claims 1 and 8.FN21 *See* ' 002 Patent col.33 ll.30-34, col.34 ll.19-24. The limitation states: "a data structure ... including: a plurality of data packets stored in said local computer-readable memory ...." Id. col.33 ll.30-34. Papyrus argues that the court should construe the phrases to mean "a data structure accommodating a plurality of data packets, which the local computer-readable memory may store sequentially or simultaneously." Pl. PCCO 3.

FN21. Because Claim 8 addresses the communication between the computer-readable memory in the HHD and the booth clerk's programmed computer, the text of the limitation is modified to reflect the storage of data in the data structures of each device. *See* '002 Patent col.30 ll.60-63; Pl. TD 79. The limitation in Claim 8 states: "a data structure ... including a plurality of data packets stored in said computer-readable memories ...." '002 Patent, col.34 ll.19-24. As the two devices appear to employ data structures similarly, the court's construction will apply to the phrases in both claims.

According to Papyrus, the data structure acts as a template to arrange data for later use, and is an organizational element that exits regardless of whether data is present or absent from the structure. Pl. Reply Br. 15. In general, the invention provides that the booth clerk's local computer-readable memory ("LCRM") stores, processes, and then sends data packets to a separate storage device. Pl. TD at 64-85. Specifically, the patent provides that "each data packet that is formulated or constructed is stored in a computer-readable memory, and may be transmitted across a two-way a[sic] wireless network, as a data structure." FN22 ' 002 Patent col.22 ll.53-56. Thus, the LCRM stores data packets in the data structure of the local memory, using appropriate routines to process each packet. Pl. TD at 81; *see* ' 002 Patent col.21 ll.56-59. Papyrus also argues that because the computer program executes different steps for different transaction types, the invention permits sequential storage of data packets and processes the packets on a packet-by-packet basis. Pl. MHSP vol. 2 at 27-28. The specification teaches that in processing newly received information data packets are removed from the local memory and sent to storage. Pl. MHSP vol. 2 at 29. At that point, a "many-to-one relationship" exists between the order and execution data packets even though they are not stored in the LCRM at the same time, but rather, in the separate storage device. Pl. TD at 82; Markman Hr'g Tr. vol. 2 at 53; *see* ' 002 Patent col.30 ll.58-63.

FN22. The data structure includes a header with each of the data packets that contains the badge number of the floor broker, the sequence number of the transaction, the transaction type and subtype, the stock symbol, date, and the time, regardless of whether the communication originates at the programmed computer or the

HHD. '002 Patent col.21 ll.34-42.

In addition, Papyrus emphasizes not only that the patent language evinces no intent to limit the claim with a simultaneous storage requirement, *i.e.,* that a particular data packet be stored in both the local memory and the separate storage computer, but also that the simultaneous storage in the local memory is not the mechanism for establishing the many-to-one relationship. Markman Hr'g Tr. vol. 2 at 53. Rather, it is "[t]hrough the use of hierarchal volley codes and sequence codes, the claimed data structure enables an electronic matching of multiple, small executions against a single, larger order." *Amendment in Application Serial No. 08/478,286* (Apr. 25, 1997), Pl.App. 16 at 231. Papyrus also contends that had the inventors intended to limit the claim, then they would have included the word "simultaneously" in the specification, as in Claim 1 of the '877 Patent. Pl. Reply Br. 16. As written, the computer must process each packet separately because it cannot hold order data packets and execution data packets simultaneously. *See* '002 Patent col.20 ll.46-col.21 l.33. Moreover, the specification discloses serial storage by expressly stating that the data packet is "sent to storage" rather than "copied to storage" to indicate removal from the data structure in the local memory. *Id.* col.30 ll.60, 62-63; Pl. Reply Br. 17.

Papyrus also relies on extrinsic evidence from dictionaries to help define the limitation with its ordinary meaning of "a particular way of organizing a group of data." Pl. Br. 25; Pl. MHSP vol.2 at 23. First, Papyrus cites the *EE Dictionary,* which defines data structure as "a particular way of organizing a group of data, usually optimized for efficient storage, fast search, fast retrieval, and/or fast modification." Pl.App. Ex. 53 at 520. Second, the *Merriam-Webster's Collegiate Dictionary,* defines "data structure" as "any of various methods of organizing data items (as records) in a computer." Pl.App. Ex. 49 at 483. Third, Papyrus referenced the *5th IEEE Dictionary* during prosecution to explain that "data structure" is a "physical or logical relationship among data elements, designed to support specific data manipulation functions." Pl.App. Ex. 56 at 529; Pl.App. Ex. 16 at 231-32.

NYSE proposes an alternative construction of "a data structure having the plurality of data packets present in the local computer readable memory at the same time." Def. PCCO 3. NYSE argues that the plain meaning of the claim language at issue is that the plurality of data packets are present in the memory at the same time. Def. Br. 29; *see* '002 Patent col.34 ll.19-24. Because the patent says nothing about removal to a remote storage device-only that it is stored or sent to storage-the invention could store the data packets in the local memory. Markman Hr'g Tr. vol. 2 at 60; *see* '002 Patent col.28 l.23, col.29 l.16, col.30 l.63 & col.31 l.23. NYSE also argues that the many-to-one relationship between an order data packet and several execution data packets can exist only if all are simultaneously present in the local computer-readable memory. Def. Br. 29; *see* Markman Hr'g Tr. vol. 2 at 64.

With regard to extrinsic evidence, NYSE points to the deposition of Dr. Lee A. Hollaar, who answered negatively when asked whether the limitation could mean storage at different points in time, and affirmatively when asked whether it was necessary "to have at one time a plurality of data packets stored." *Excerpts from Hollaar Dep.,* Gaspar Decl. Ex. 4 at 228; Def. Reply Br. 15-16. FN23 Based on this testimony, NYSE contends that Dr. Hollaar admitted that multiple packets had to be in the memory at the same time. Def. MHSP 150-51.

FN23. Following a request for Dr. Hollaar to interpret the phrase "a plurality of data packets stored in said local computer-readable memory," the testimony was as follows:
A: [It][m]eans that it stores more than one data packet in the memory.

Q: [C]ould [this phrase mean storage at] different points in time, so if it first stores one data packet and then

later stores another data packet, that satisfies having a plurality of data packets stored in memory?

A. Well, certainly not.

Q: Okay. So you have to have at one time a plurality of data packet stored; right?

A. Right.

Gaspar Decl. Ex. 4 at 228.

Papyrus counters, noting that Dr. Hollaar amended his testimony because the questions were allegedly ambiguous. Indeed, Dr. Hollaar changed his responses from "certainly not" and "Right" to "Maybe." Pl. MHSP vol. 2 at 38. Further, Dr. Hollaar testified that "[the patent] says that there has to be a plurality of data packers stored in the local computer memory. That means more than one is stored. It doesn't necessarily say simultaneously." Pl. MHSP vol. 2 at 36.

The Federal Circuit has held that "when the specification describes the invention in broad terms, accompanied by specific examples or embodiments, the claims are generally not restricted to the specific examples or the preferred embodiments unless that scope was limited during prosecution." Kinik Co. v. ITC, 362 F.3d 1359, 1364-1365 (Fed.Cir.2004). The court therefore need not restrict the meaning of the limitation to the preferred embodiment. Nonetheless, "while it is of course improper to limit the claims to the particular preferred embodiments described in the specification, the patentee's choice of preferred embodiments can shed light on the intended scope of the claims." Astrazeneca AB, Aktiebolaget Hassle, KBI-E, Inc. v. Mut. Pharm. Co., Inc., 384 F.3d 1333, 1340 (Fed.Cir.2004).

In this case, the only mention in the specification of external storage appears in the explanation of the programmed computer's functions. During a receive routine, if

the transaction sequence number is known, then the file record for that instruction is received at step 792 from a storage area 794 (*illustrated as a magnetic storage device, but the storage area could equally be a computer readable memory* containing the data that corresponds to that transaction sequence number in the data structure) ....

'002 Patent col.29 ll.57-62 (emphasis added). That Figures 14-18 all have illustrations similar to that appearing in Fig. 16 step 794 implies that steps 724, 760, 810, 844, 894 and 906 may also be either separate magnetic storage devices or local computer-readable memories. As the specification seems to specifically allow for either type of device, the court is reluctant to limit the claim by requiring a specific type of storage device. Nevertheless, the court is persuaded by Figures 1 and 7 of the patent, which illustrate the simultaneous display of numerous data packets. *See* '002 Patent Fig. 1 steps 324, 328 & 342; id. Fig. 7 steps 424, 430, 432. Presumably, to display numerous data packets on the display of either the HHD or the programmed computer, the local computer-readable memories of each device must store the data packets

simultaneously for display and access by the user. Additionally, the court notes that Claims 1 and 8 of the patent references "said local computer-readable memory," "a computer-readable memory," and "said computer-readable memories" and not separate storage devices. *See* '002 Patent col.33 ll.33-34, col.34 ll.14-15, 18-20. Thus, the court agrees with NYSE and finds that the term "data structure" means "a data structure having the plurality of data packets present in the local computer-readable memory at the same time."

3. "Each of said data packets containing said information"

[47] The element at issue appears in Claim 1 of the '002 Patent, which states: "a plurality of data packets stored in said local computer-readable memory, *each of said data packets containing said information* and further containing a sequence code and a volley code ...." '002 Patent col.33 ll.33-36 (emphasis added). Papyrus suggests that the phrase means "each data packet includes some information used by an application program." Pl. PCCO 3 (emphasis added). Noting that the "said information" language in the data-packet limitation follows the "including information" language in the preceding data structure language, Papyrus argues that the "said information" language refers to any information used by the program in the data-structure limitation. Pl. MHSP vol. 2 at 44-45; *see* '002 Patent col.33 ll.31, 34-35. Papyrus also notes that the written description states that the data "accompan [ying] the header in a fully constructed data packet differs depending on the type of the instruction ...." Pl. Br. 30; *see* '002 Patent col.22 ll.50-52. Additionally, Papyrus cites the Abstract, which teaches that the data packets contain "information used by the application program as well as a sequence code and a volley code." '002 Patent Abstract. Thus, because the content of an order data packet is different from that of an execution report data packet, Papyrus alleges that it would be illogical to require that all data packets contain the same information. *See* Pl. MHSP vol. 2 at 46; '002 Patent col.23 ll.39-42.

NYSE recommends a definition where "each data packet includes some information used by the application program that is the same." Def. PCCO 3. NYSE posits that the use of "said" in the phrase "data packets containing *said* information" refers to the term "information" previously cited in the claim. '002 Patent col.33 ll.34-35 (emphasis added); Def. Reply Br. 17; Def. MHSP 156.

[48] [49] To construe the plain meaning of the language at issue, the court must determine the antecedent basis of the word "said" in the phrase. In patent drafting, the requirement of antecedent basis is a rule that is administered during patent examination. *See* Energizer Holdings, Inc. v. ITC, 435 F.3d 1366, 1370 (Fed.Cir.2006). To comply with the rule, "each element of a claim must have an antecedent basis; otherwise, the claim would be rejected as indefinite under 35 U.S.C. s. 112." FN24 Astra Aktiebolag v. Andrx Pharm., Inc., 222 F.Supp.2d 423, 458 (S.D.N.Y.2002). " 'A claim is indefinite [under 35 U.S.C. s. 112] when it containswords or phrases whose meaning is unclear.' " *Id*. at 458 (quoting the *Manual of Patent Examining Procedure* s. 2173.05(e)). The lack of clarity may arise, for example, "where a claim refers to 'said lever' or 'the lever' where the claim contains no earlier recitation or limitation of a lever and where it would be unclear as to what element the limitation was making reference." Id. (quotations omitted); *see* Leighton Tech. LLC v. Oberthur Card Sys., S.A., 358 F.Supp.2d 361, 383 (S.D.N.Y.2005). To ensure clarity, "a foundation or antecedent basis must be laid for each element recited," which can be accomplished "by introducing each element with the indefinite article ('a' or 'an')" and modifying subsequent mentions of the element by the "definite article or by 'said' or by 'the said,' thereby making later mention(s) of the element unequivocally referable to its earlier recitation." John Gladstone Mills III *et al.*, 2 *Patent Law Fundamentals* s. 14:13 (2d ed.2004).

FN24. Similarly, the regulations also require that "the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description." 37 C.F.R. s. 1.75(d)(1).

In this case, the key difference between the two proposed constructions is that Papyrus focuses on the application program's use of information in the data packets, while NYSE focuses on the content within each of the data packets. Here, the antecedent basis of "said information" is the phrase "information used by said application program," which indicates that the data packets contain information that is used by the program. *See* '002 Patent col.33 ll.31-32, 35. Although the claim language does not directly address the content of the individual data packets, the technology demonstration made clear that a "many-to-one relationship" exists between the order and execution data packets stored in the LCRM. As a result, in order to create the relationship, the data packets necessarily contain some of the same content, such as a stock symbol and sequence number. Pl. TD at 82; *see* '002 Patent col.21 ll.44-46 (explaining that the "sequence number is used as a reference for grouping related communications (instructions)"). Based on the claim language and the technology demonstration, the court finds that the contested phrase means "each data packet includes some information used by an application program that may be the same."

4. "Volley code"

[50] The meaning of the term "volley code," which appears in both Claim 1 and 8 of the '002 Patent, is also in dispute. Papyrus suggests that the term means "one or more symbols used for relating one communication or instruction to another communication or instruction." Pl. PCCO 3; Markman Hr'g Tr. vol. 2 at 87. Moreover, Papyrus alleges that volley codes communicate the stage, *i.e.,* the status, of a transaction or instruction. Markman Hr'g Tr. vol. 2 at 88-89. Specifically, the "Detailed Description" section of the patent addresses volley codes, stating that "[t]he system utilizes volley codes to define the present *stage of a transaction or instruction*." '002 Patent col.18 l.41-42 (emphasis added). In addition, Papyrus also notes that the definition of the word "code" is "a system of signals or symbols for communication" and "a system of symbols (as letters, numbers, or words) used to represent assigned and often secret meanings." Pl.App. Ex. 48 at 457; *see* Pl.App. Ex. 49 at 481.

In the alternative, NYSE suggests a construction where the term means "a code that reflects the current stage of communications for a transaction." Def. PCCO 3. Although NYSE cites claim language which states "said volley code defining *a hierarchical relationship* among said subset of data packets," it asks that the court construe the term to mean in part, "the stage of the transaction." '002 Patent col.33 ll.38-39, col.34 ll.28-29 (emphasis added); Def. Reply Br. 18.

Papyrus, however, contends that NYSE's proposed definition "restricts volley codes to characters that reflect the 'current stage of communications.' " Pl. Reply Br. 20. According to Papyrus, "nothing in the written description manifests an intent to confine the volley codes to the preferred embodiments ...." Pl. Reply Br. 20-21. Indeed, the patent explains that although the preferred embodiment provides for the use of specific symbols as volley codes (*e.g.,* "Q," "O," "M," "E," "S," "A"), the "characters [used] are merely illustrative of the essential function of the system which they represent" and therefore, "other characters or digital means may be used to identify the progression of one communication from one device to another." ' 002 Patent col.18 ll.60-63; *see* id. col.18 ll.53-59. As a result, the specification supposedly teaches that a "volley code" may also broadly identify the progression of a communication. Pl. MHSP vol. 2 at 55; *see* Fuji Photo Film Co., 386 F.3d at 1106. Moreover, because Claims 1 and 8 expressly provide that volley codes define a hierarchical relationship, the phrase "volley code" should not be construed to repeat that express provision. Pl. Reply Br. 20.

Here, the meaning of "volley code" as explained by the patent language is ambiguous. On one hand, the written description clearly states not only that volley codes "define the present stage of a transaction or instruction" but also that "other characters or digital means may be used to identify the progression of a communication from one device to another." '002 Patent col.18 ll.41-42, 61-63. On the other hand, the claim states that volley codes define hierarchical relationships among a subset of data packets. *See* '002 Patent Abstract, col.8 ll.2-3, col.33 ll.38-39, col.34 ll.28-29. Nevertheless, the court finds that Figures 12 and 13 are

crucial to understanding the purpose and role of volley codes in the method. According to the specification, Figure 12 shows "*the progression* among several of the principal subtypes [of volley codes] for orders and quote requests as they are disseminated and handled." Id. col.18 ll.65-67 (emphasis added). Figure 13 also depicts the progression, between the programmed computer and the HHD which prompts the invention to use the volley code that corresponds with the stage of the transaction. Based on the language in the specification and the pictorial representations of the invention, the court defines volley codes as "codes that define the present stage of a transaction or which reflect the progression of communications for a transaction."

5. "A data structure stored in each of said [first and second] computer-readable memories"

[51] The court must now construe the phrase "a data structure stored in each of said [first and second] computer-readable memories" from Claim 8. ' 002 Patent col.34 ll.19-20. Papyrus proposes that the phrase means "the respective first or second computer-readable memory stores a data structure with information accessible by the respective first or second computer." Pl. PCCO 3. NYSE defines the phrase as "the same data structure is stored in both the first or second computer-readable memories." Def. PCCO 4.

That the claim specifically describes a "wireless communications link between said first and second computers which is selectively established to enable transmission of said data packets therebetween," implies the two computer-readable memories described in the claim are both capable of processing the same data packet. *See* '002 Patent col.34 ll.37-39. To do so, the computer-readable memories must contain data structures that are structured the same. In addition, the court notes that each data structure contains "information which is accessible by each of said first and second application programs ...." Id. col.34 ll.20-22. Based on the claim language, the court construes the phrase as "the same data structure is stored in both the first and second computer-readable memories and contains information accessible by the respective first or second computer."

D. The '981 Patent

Papyrus and NYSE ask the court to construe three separate elements from the ' 981 Patent. The patent teaches "a method for executing a cross-trade" which permits the floor broker to cross at least a portion of the buy order with the sell order and to selectively transmit the crossed trade to a remote computer. '981 Patent Abstract. Claim 1, the sole claim from this patent that is disputed, recites:

1. A method for executing a cross-trade effected by a particular one of a plurality of floor brokers, each of the plurality of floor brokers having a computer that receives and transmits in a wireless manner, comprising the steps for the particular floor broker of:

receiving a transmission at a computer carried by the floor broker which represents a sell order for execution, the sell order concerning an instrument and including a first set of terms;

receiving a transmission at the computer carried by the floor broker which represents a buy order for execution, the buy order concerning the instrument and having a second set of terms which is compatible with the first set of terms;

permitting the floor broker to manually cross at least a portion of the buy order with the sell order using the computer so as to define a match between the portion of the buy order with the sell order; and

selectively transmitting to a remote computer the crossed [ ] FN25 portion of the buy and sell orders in response to the permitting step, whereby a cross-trade is executed of the matched portion of the buy order with the sell order and reported to the remote computer and executed.FN26

FN25. Following a *Certificate of Correction,* the word "out" was deleted from col.33 l.64. *See Certificate of Correction in Application Serial No. 10/210,301* (Feb. 15, 2005), Pl.App. Ex. 45 at 414.

FN26. During the Markman Hearing, Papyrus alleged that inclusion of the words "and executed" at the end of Claim 1 was an error, a claim to which NYSE made no objection. Markman Hr'g Tr. vol. 2 at 103, 117-118. The patent prosecution history makes clear that Papyrus sought to amend the claim and exclude the phrase. *See Amendment in Application Serial No. 10/210,310* (June 16, 2003), Pl.App. Ex. 41 at 366; *Request for Certificate of Correction in Application Serial No. 10/210,301* (Dec. 21, 2004), Pl.App. Ex. 44 at 398. Although the record contains no Certificate of Correction addressing the error, the court notes that the limitation language in the PTO's *Notice of Allowability* is inconsistent. *See Notice of Allowability in Application Serial No. 10/210,310* (Apr. 21, 2002), Pl.App. Ex. 43 at 380 ("whereby a cross-trade is executed ... and reported to the remote computer *and executed*" (emphasis added)); *id* at 381-382 ("whereby a crossed-trade [sic] is executed ... and reported to the remote computer"). In light of the evidence, the court accepts Papyrus's claim that the phrase "and executed" should not be considered during claim construction. *See* Novo Indus., L.P. v. Micro Molds Corp., 350 F.3d 1348, 1354 (Fed.Cir.2003) (holding that district court can correct error in patent where no certificate of correction has been issued only if "(1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims").

'981 Patent col.33 ll.45-67.

1. The Transmitting Step

[52] The last limitation in Claim 1 of the '981 Patent is the transmitting step, which states: "selectively transmitting to a remote computer the crossed [ ] portion of the buy and sell orders in response to the permitting step ...." '981 Patent col.33 ll.63-65. Papyrus posits that the limitation means "choosing to send and then sending to a remote computer information about the crossed buy and sell orders, where one or more transmissions may be used for reporting the cross-trade." Pl. PCCO 3. Papyrus notes that the claim does not contain any language restricting the selectively transmitting step to a single transmission. Pl. Reply Br. 23; Pl. MHSP vol. 3 at 20.

Papyrus relies primarily on the illustrative transaction described during prosecution. Pl. Reply. Br. 23. In its February 2000 amendment, Papyrus described an illustrative transaction involving three orders for IBM stock: a 20,000-share buy order, a 10,000-share sell order, and a 5,000-share sell order. *See Amendment in Application Serial No. 09/193,089* (Feb. 22, 2000), Pl.App. Ex. 22 at 269. After explaining that the floor broker crossed a portion of the buy order with the two sell orders, Papyrus stated that

[w]hen the floor broker transmits the crossed trade, all that is reported to a remote computer is a single trade of 15,000 shares at market. The order details will specify to whom the buying customer should go for his or her shares. In contrast, automated reporting systems would not minimize the reporting of such transactions, but would rather result in two separate prints, one for the 10,000 share trade and the other for the 5,000 share trade.

Id. The invention therefore produces fewer reports for the buying customer than in other reporting systems. However, Papyrus also contends that "those skilled in the art would appreciate that Papyrus's prosecution-history example involved three transmissions, one for the buying customer, one for the 10,000-share selling customer, and one for the 5,000-share selling customer." Pl. Br. 39. The specification requires that: (a) in a cross-trade an order's sequence number replaces the contra badge number in the execution report data

packet, and (b) each order has its own sequence number. *See* Pl. MHSP vol. 3 at 26-27; '981 Patent col.21 ll.58-59, col.23 ll.54-56. Therefore, Papyrus alleges that "a cross-trade according to the preferred embodiment involves at least two execution report data packets: a buy execution data packet that includes the sell order's sequence number, [and] a sell execution data packet that includes the buy order's sequence number." Pl. MHSP vol. 3 at 27. As an ancillary, Papyrus also argues that "[e]ven if the preferred embodiment uses a single transmission, there is no basis to read that limitation into the claims" as there has been no clear disavowal of claim scope during prosecution. Pl. MHSP vol. 3 at 28.

In the alternative, NYSE proposes a construction where the limitation means "sending a single transmission reporting the cross-trade including both the buy and the sell sides of the transaction." Def. PCCO 3-4. Specifically, NYSE argues not only that the crossed buy and sell orders must be transmitted in one report, but also that the February 2000 amendment is evidence of Papyrus's reliance upon the transmission of a single report to overcome the prior art. Def. Br. 36-37; Def. Reply Br. 20-21; Def. MHSP 189. According to NYSE, Papyrus makes an unambiguous distinction between a "single trade" and "two separate prints." Def. Reply Br. 21.

[53] The parties therefore ask the court to determine whether the specification requires a single transmission or whether it allows for multiple transmissions in a cross-trade. Statements disclaimingclaim scope must be "sufficiently clear and deliberate to meet the high standard for finding a disclaimer of claim scope." Honeywell Int'l, Inc. v. Universal Avionics Sys. Corp., 493 F.3d 1358, 1365 (Fed.Cir.2007). However, "[t]here is no 'clear and unmistakable' disclaimer if a prosecution argument is subject to more than one reasonable interpretation, one of which is consistent with a proffered meaning of the disputed term." SanDisk Corp. v. Memorex Prods., Inc., 415 F.3d 1278, 1287 (Fed.Cir.2005).

Here, both parties cite to the same passage from the prosecution history, but arrive at entirely different conclusions. The court, however, does not find more than one reasonable interpretation of the passage. The prosecution history makes clear that "[w]hen the *floor broker* transmits the crossed trade, all that is *reported to a remote computer* is a *single trade* of 15,000 shares at market," in contrast to the "two separate prints" produced by automated reporting systems and sent to the principals. Pl.App. Ex. 22 at 269 (emphasis added). The court interprets this as an indication of a single transmission.

Furthermore, the court does not agree with Papyrus's claim that a cross-trade involves a buy execution data packet with the sell order's sequence number and a sell execution data packet that includes the buy order's sequence number. Pl. MHSP vol. 3 at 27. In Figure 10, to report a crossed-trade, the

floor broker is crossing the present order with another one that [sic] with compatible terms in [the contra box 530] by touching the appropriate complementary side of the trade in that stock, which list is preferably sorted from the list of unfilled orders for all stocks that the floor broker is to trade and listed in a region 540 of the contra box 530.

'981 Patent col.17 l.63-col.18 l.2. Once the information has been entered, the broker presses the add button (region 472) to "complete *the* data packet" and "add the execution in the form of a data structure to a list stored in ... region 474 ...." *Id*. col.18 ll.4-8 (emphases added); *see id*. Fig. 9. After "*the* data packet" is complete, "[*t*] *he* report is then sent to the clerk by sending button 476." *Id*. col.18 ll.5, 16-17 (emphasis added). The specification's dual use of the article "the" places emphasis on the transmission of a single data packet to report the cross trade. Though it is a fundamental principle of patent law that the claim should not be limited to the preferred embodiment, the specification language, coupled with a clear disclaimer in the prosecution history, leads the court to conclude that a cross-trade is reported by the transmission of a single data packet. *See* Fuji Photo Film Co., 386 F.3d at 1106. Accordingly, the court finds that the transmitting step in Claim 1 means that "the execution of the cross-trade is consummated upon transmission of the crossed portion to a remote computer." FN27

FN27. With regard to the term "selectively," the prosecution history explains that the broker selects between reporting each partial execution or all of them at once, but always transmits each crossed portion of a buy and sell as a single transmission. *See Prosecution History Excerpts of Application Serial No. 09/193,089,* Murray Decl. Ex. 9 at 101520 ("[I]f the floor broker is ready to send the partial execution(s), he or she may do so at steps 866, 868, and then continue to trade at step 856 until the leaves are zero, or may simply continue to trade at step 856 until he or she has a moment to send the executions ....").

2. "Whereby a cross trade is executed"

[54] Having addressed the general meaning of the transmitting step, the court must now construe the clause "whereby a cross trade is executed." *See* '981 Patent col.33 l.65. Papyrus suggests that the whereby clause does not constitute a claim limitation. Pl. PCCO 3. More particularly, Papyrus contends that the clause merely reflects the intended result of the four steps directly preceding the phrase, and thus does not constitute a claim limitation. Pl. MHSP vol. 3 at 4; Pl. Br. 39; *see* Minton v. Nat'l Ass'n of Sec. Dealers, Inc., 336 F.3d 1373, 1381 (Fed.Cir.2003) ("A whereby clause in a method claim is not given weight when it simply expresses the intended result of a process step positively recited."). Papyrus cites the Abstract as evidence that the whereby clause expresses an intended result. It states: "As a result, a cross-trade is reported to the remote computer and executed." ' 981 Patent Abstract. Papyrus alleges that the last sentence of the Abstract "corresponds" to the whereby clause and also states the intended result of the preceding steps. Pl. MHSP vol. 3 at 9-10. To further support its position, Papyrus argues that the clause is not a limitation because the four steps in Claim 1 define a fully operational method after which a cross trade has been completed and reported. Pl. Reply Br. 20-21; *see* Minton, 336 F.3d at 1381.

NYSE, on the other hand, argues that the whereby clause is a claim limitation. Accordingly, NYSE requests that the court construe the clause as a limitation meaning "the execution of the cross-trade is consummated upon transmission of the crossed portion to a remote computer." Def. PCCO 3. With regard to the specification language, NYSE argues that the final sentence in the Abstract does not communicate an intended result, but rather, explains that the selective transmitting of the data packet both reports and executes the cross-trade. Def. Br. 34.

NYSE also relies on the prosecution history, alleging that to distinguish the prior art, Papyrus claimed that the trade was not executed until the crossed portion had been transmitted. *Id*. In its February 2000 amendment, Papyrus explained that

[t]he floor broker is permitted to cross at least a portion of buy and sell orders which concern the same instrument and which have compatible terms. The broker thereafter *selectively transmits* the crossed portion of the buy and sell orders to a remote computer.... *Prior to that transmission, the crossed portion is not a "trade," but rather is only a match of compatible orders within the computer being carried by the floor broker*.

Pl.App. Ex. 22 at 268 (emphasis added). The language therefore indicates that the transmission is that action that causes the "trade." Def. Br. 34. NYSE also argues that Papyrus distinguished the Gutterman prior art as failing to disclose execution of a cross-trade through selective transmission. FN28 Def. Br. 34; Def. MHSP 180. During prosecution, Papyrus stated that

FN28. Initially, the PTO determined that Papyrus's claims were unpatentable in view of the Gutterman patent. *See Office Action in Application Serial No. 09/193,089* (Nov. 19, 1999), Pl.App. Ex. 21 at 259-60. The PTO noted, that although the Gutterman patent did not particularly state that the broker can execute a cross-trade, Papyrus's claimed subject matter "would have been common sense obvious to one of ordinary

skill in the art at the time of the invention" because it would "enable the broker to reconcile two orders with one transaction," thereby maximizing his time and his commission. *Id*. at 259.

there is no express disclosure of executing a cross trade in the Gutterman et al. patent, and no disclosure or suggestion that a crossed portion of respective buy and sell orders be "*selectively transmitted*" *whereby a cross-trade is executed* and reported to the remote computer .... Accordingly, the claimed method cannot be rendered obvious by the Gutterman et al. patent.
Pl.App. Ex. 22 at 271 (emphasis added). A few days later Papyrus submitted further remarks, emphasizing that
the cross-trade occurs at the point of sale, that is, within the trading crowd and not elsewhere. The selective transmission is the step by which the cross-trade is done within the computer carried by the floor broker. *Upon transmitting* the fact that there has been a cross-trade, the *trade is executed* and also (publicly) reported to the remote computer.

Supplemental Response in Application Serial No. 09/193,089 (Feb. 28, 2000), Pl.App. Ex. 23 at 274 (emphasis added). Based on these statements, NYSE contends that Papyrus "unequivocally disavowed" configurations that relate to reporting trades that were previously executed in the trading crowd. Def. Br. 35. Papyrus counters that its *Supplemental Response* demonstrates its reliance on the permitting step and the transmitting step rather than the "whereby" clause to distinguish the patent over the prior art. Pl. MHSP vol. 3 at 11; *see* Pl.App. Ex. 23 at 274. Specifically, Papyrus alleges that it sought to indicate that the cross-trade occurred before transmission, within the presence of a specialist. Pl. MHSP vol. 3 at 13. Papyrus also cites its June 16, 2003 amendment as further support for its argument that the transmitting step does not cause cross-trade consummation.

However, the prosecution history language that Papyrus cites states that the steps in Claim 1, *i.e.*, "a manual cross trade and then, selectively, a transmission to a remote computer for reporting," concern "matching and *execution* and so they are also, necessarily, pre-reconciliation." *Amendment in Application Serial No. 10/210,310* (June 16, 2003), Pl.App. Ex. 41 at 374. That the cross trade is reconciled after transmission does not mean the cross-trade is not complete, but only that it is checked for accuracy. *See Webster's New International Dictionary* 1897 (3rd ed. 1993) ("*Webster's NID*") (defining "reconcile" as "2a: to make consistent or congruous: harmonize" and "[2]b: to obtain agreement between (two financial records) by accounting for all outstanding items"). Furthermore, the prosecution history contains at least two other explanations indicating that selective transmission is the act which executes the cross-trade. *See* Pl.App. Ex. 22 at 268-69; Pl.App. Ex. 23 at 274. *See* Hoffer v. Microsoft Corp., 405 F.3d 1326, 1329 (Fed.Cir.2005) ("[W]hen [a] 'whereby' clause states a condition this is material to patentability, it cannot be ignored in order to change the substance of the invention."). Accordingly, the court finds that the whereby clause constitutes a claim limitation meaning "sending a single transmission reporting the cross-trade including both the buy and the sell sides of the transaction."

3. "Execution"

[55] The final element that the court must construe in this case is the term "execution" in Claim 1 of the '981 Patent. Papyrus argues that the term has its ordinary meaning of "carrying out a trade." Pl. PCCO 3. Papyrus contends that the specification uses the term "execute" in various ways, including "an execution report," "a completed trade," and "carrying out a trade," which demonstrates a more expansive meaning rather than a particular definition.FN29 Pl. Br. 35; *see* N. Telecom Ltd. v. Samsung Elecs. Co., Ltd., 215 F.3d 1281, 1291 (Fed.Cir.2000) ("[T]he 'varied use of a disputed term in the written descriptiondemonstrates the breadth of the term rather than providing a limited definition.' " (quoting Johnson Worldwide Assoc., Inc. v. Zebco Corp., 175 F.3d 985, 991 (Fed.Cir.1999))). Additionally, Papyrus cites the *Dictionary of Financial and Investment Terms* (6th ed.2003), to argue that "execution" in the securities context means

"carrying out a trade" and that a "broker who buys or sells shares is said to have executed an order." Pl.App. Ex. 47 at 451.

FN29. That Papyrus cites the patent in its entirety rather than providing specific examples of the alleged uses weakens this argument.

Although NYSE does not put forth any specific arguments regarding the definition of "execution," it contends that the term means "the consummation of a trade." Def. PCCO 4.

In this case, the court is persuaded by Papyrus's own statements during prosecution that "the cross-trade *occurs* at the point of sale" and that the "selective transmission is the step by which the cross-trade is *done*." Pl.App. Ex. 23 at 274 (emphasis added); *see Webster's NID* 1561 (defining "occur" as "2: to present itself: come to pass: take place: happen"); *id*. at 664-65 (defining "do" as "2: to bring to pass, carry out ... 4: to perform (as an action) by oneself or before another: execute ... 6: to bring to an end: complete, finish"). Moreover, Papyrus's amendment clearly states that the trade is completed at the time the floor broker selectively transmits the cross-trade to the booth clerk. Pl.App. Ex. 23 at 274. Accordingly, the court construes "execution" as "the consummation of a trade."

IV. Conclusion

This claim-construction ruling will govern subsequent proceedings. The parties shall confer and inform the court by joint letter, to be submitted on or before September 30, 2008, on how they propose to proceed.

The court adopts and incorporates herein the list of Claim Constructions annexed hereto.

SO ORDERED

Claim Constructions

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Patent	Claim term	Construction
'877	"managing one or more floor brokers"	The preamble does not constitute a claim limitation.
'877	"current-status information"	information indicating whether an instruction is pending or not pending.
'877	"current-status information" in the transmitting, calculating and displaying steps	The claim does not require that all transmitted current-status information be displayed at the programmed computer; rather, the calculating step involves using some current-status information for calculating, and the displaying step, like the immediately preceding calculating step, involves using some current-status information.
'877	Calculating Step	mathematically processing the current-status information to expressly determine a number of unfilled orders to be completed
'877	Displaying Step	the current status information for one instruction and some current-status information for another instruction may be simultaneously displayed
'877	Selecting Step	the operator selects, based on the displayed current status information and number of unfilled orders calculated above

		using current status information, the identity of a floor broker to whom a further instruction is to be transmitted
'877	"transmitting" and the phrase "transmitting ... from [one device] to [another device]"	sending from one place to another
'002; Claim 1	"data packet"	data in binary form, including address and control elements
'002; Claim 1, 8	"a data structure ... including: a plurality of data packets stored in said local computer- readable memory[ies]"	a data structure having the plurality of data packets present in the local computer-readable memory at the same time
'002; Claim 1	"each of said data packets containing said information"	each data packet includes some information used by an application program that may be the same
'002; Claim 1, 8	"volley code"	codes that define the present stage of a transaction or which reflect the progression of communications for a transaction
'002; Claim 8	"a data structure stored in each of said [first and second] computer- readable memories"	the same data structure is stored in both the first and second computer-readable memories and contains information accessible by the respective first or second computer
'981	Transmitting Step	the execution of the cross-trade is consummated upon transmission of the crossed portion to a remote computer
'981	"whereby a cross-trade is executed"	sending a single transmission reporting the cross-trade including both the buy and sell sides of the transaction
'981	"execution"	the consummation of a trade