

United States District Court,  
E.D. Missouri, Eastern Division.

**AVANTE INTERNATIONAL TECHNOLOGY CORPORATION,**  
Plaintiff.

v.

**DIEBOLD ELECTION SYSTEMS, Sequoia Voting Systems, and Election Systems & Software, Inc,**  
Defendants.

**Diebold Election Systems, Sequoia Voting Systems, and Election Systems & Software, Inc,**  
Counter-Claimants.

v.

**Avante International Technology Corporation,**  
Counter-Defendant.

No. 4:06cv0978 TCM

**Aug. 20, 2007.**

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### ***MEMORANDUM AND ORDER ON CLAIM CONSTRUCTION***

**THOMAS C. MUMMERT, III, United States Magistrate Judge.**

The parties are manufacturers of electronic voting equipment. Plaintiff, Avante International Technology Corporation ("Plaintiff" or "Avante"), alleges that defendants Sequoia Voting Systems ("Sequoia"), Diebold Election Systems ("Diebold"), and Election Systems & Software, Inc. ("ES & S") (hereinafter collectively referred to as "Defendants") are infringing on three of its patents: U.S. Patent No. 7,036,730 (the "730 Patent"), titled "Electronic Voting Apparatus System and Method"; U.S. Patent No. 6,892,944 (the "4 Patent"), titled "Election Voting Apparatus & Method for Optically Scanned Ballot"; and U.S. Patent No. 7,077,313 (the "313 Patent"), titled "Electronic Voting Method for Optically Scanned Ballot." Each defendant has filed a counterclaim denying that they have infringed any of the three patents and alleging that each patent is invalid and unenforceable.

Their dispute is now before the Court FN1 on the parties' request for claim construction.FN2 A Claim Construction Hearing was held on June 1, 2007, at which counsel presented arguments but no testimony.

Having considered the arguments and briefs filed by the parties, the Court construes disputed claims in the '730, '4, and ' 313 Patents as set forth below.

FN1. The case is before the undersigned United States Magistrate Judge by written consent of the parties. *See* 28 U.S.C. s. 636(c).

FN2. All three Defendants jointly presented the proposed constructions of the disputed terms and phrases of the 3 patents in suit.

### *Claim Construction Principles*

"An infringement analysis requires two steps: (1) claim construction to determine the scope and meaning of the asserted claims, and (2) a comparison of the properly construed claims with the allegedly infringing device or method to determine whether the device or method embodies every limitation of the claims." *IMS Tech., Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1429 (Fed.Cir.2000). "[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 (1996) (alteration added). "[J]udges, not juries, are better suited to find the acquired meaning of patent terms." *Id.* at 388 (alteration added).

In determining the proper construction of a claim, the Court should first be guided by intrinsic evidence, i.e., the words of the claim, the specification, and the patent prosecution history, and, if an analysis of the intrinsic evidence alone does not resolve an ambiguity in a disputed claim term, by extrinsic evidence, e.g., expert testimony, inventor testimony, or dictionaries. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582, 1583, 1584 (Fed.Cir.1996). "[The] intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language." *Id.* at 1582 (alteration added).

In reviewing the intrinsic evidence, the Court first looks to "the words of the claim themselves, both asserted and nonasserted, to define the scope of the patented invention." *Id. Accord North Am. Vaccine, Inc. v. Am. Cyanamid Co.*, 7 F.3d 1571, 1575 (Fed.Cir.1993). "Although words in a claim are generally given their ordinary and customary meaning, a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification or file history." *Vitronics Corp.*, 90 F.3d at 1582 (citing *Hoechst Celanese Corp. v. BP Chems., Ltd.*, 78 F.3d 1575, 1578 (Fed.Cir.1996)). *See also DeMarini Sports, Inc. v. Worth, Inc.*, 239 F.3d 1314, 1324 (Fed.Cir.2001) (cautioning that the ordinary meaning of a term cannot be looked at in a vacuum, but must be examined in the context of the patent's written description and prosecution history). There is "a '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.'" *PODS, Inc. v. Porta Stor, Inc.*, 484 F.3d 1359, 1366 (Fed.Cir.2007) (quoting *Fin Control Sys. Pty., Ltd. v. OAM, Inc.*, 265 F.3d 1311, 1318 (Fed.Cir.2001)). Additionally, "[d]ifferences among claims can also be a useful guide in understanding the meaning of particular claim terms." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed.Cir.2005) (en banc) (alteration added). "For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim." *Id.* at 1314-1315 (citing *Lielbel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed.Cir.2004)).

"The claims, of course, do not stand alone. Rather, they are part of a fully integrated written instrument, consisting principally of a specification that concludes with the claims," and " 'must be read in view of the specification, of which they are a part.' " *Id.* at 1315 (interim quotations omitted). *See also* *North Am. Vaccine, Inc.*, 7 F.3d at 1576 ("When the meaning of a claim term is in doubt, [the court] look[s] to the specification for guidance.") (alterations added). Specifications, the second of the three types of intrinsic evidence, must therefore be reviewed to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning. *Vitronics*, 90 F.3d at 1582. " '[T]he specification is always highly relevant to the claim construction analysis,' " and " 'is the single best guide to the meaning of a disputed term.' " *Honeywell Int'l, Inc. v. ITT Indus., Inc.*, 452 F.3d 1312, 1318 (Fed.Cir.2006) (quoting *Phillips*, 415 F.3d at 1315) (alteration added). "[C]are must be taken[, however,] to avoid reading 'limitations appearing in the specification ... into [the] claims.' " *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1331 (8th Cir.2001) (last alteration in original). " '[T]here is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specifications.' " *Id.* at 1331-32 (quoting *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed.Cir.1998)) (alteration added).

In addition to the words of the claim and the specification, "the court may also consider the prosecution history of the patent, if in evidence." *Vitronics Corp.*, 90 F.3d at 1582. The prosecution history is "the complete record of all the proceedings before the Patent and Trademark Office, including any express representations made by the applicant regarding the scope of the claims," *id.*, and any "[a]rguments and amendments made during the prosecution of a patent application[,]" *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576 (Fed.Cir.1995) (alterations added). It " 'can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.' " *Aero Products Int'l, Inc. v. Intex Recreation Corp.*, 466 F.3d 1000, 1010 (Fed.Cir.2006) (quoting *Phillips*, 415 F.3d at 1317). *See also* *Southwall Techs., Inc.*, 54 F.3d at 1576 (noting that "[t]he prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution") (alteration added); *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 345 F.3d 1318, 1328 (Fed.Cir.2003) ("In the course of prosecuting a patent application, a patentee may redefine a claim term."); *Ekchian v. Home Depot, Inc.*, 104 F.3d 1299, 1304 (Fed.Cir.1997) ("[S]ince, by distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover, he is by implication surrendering such protection.") (alteration added).

If, after consideration of "all available intrinsic evidence," there remains "some genuine ambiguity in the claims," the court may look at extrinsic evidence. *Vitronics Corp.*, 90 F.3d at 1584. Dictionaries are a form of extrinsic evidence that "hold a special place and may sometimes be considered along with the intrinsic evidence," *Interactive Gift Express, Inc.*, 256 F.3d at 1332 n. 1, "so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents," *Vitronics Corp.*, 90 F.3d at 1584 n. 6.

"Throughout the construction process, [however,] it is important to bear in mind that the viewing glass through which the claims are construed is that of a person skilled in the art." *Interactive Gift Express, Inc.*, 256 F.3d at 1332 (alteration added). *See also* 35 U.S.C. s. 112, para. 1 (providing, in relevant part, that "[t]he specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms *as to enable any person skilled in the art to which it pertains*, or with which it is most nearly connected, to make and use the same, ....") (emphasis added) (alterations added).

The above-described two-step infringement analysis of a claim is to be employed when examining claim limitations drafted pursuant to 35 U.S.C. s. 112, para. 6. "Limitations contemplated by s. 112, para. 6, often referred to as means-plus-functions or step-plus-functions limitations, recite a specified function to be performed rather than the structure, material, or acts for performing that function." *IMS Tech., Inc.*, 206 F.3d at 1429. Section 112, para. 6 provides:

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

"The literal scope of a properly construed means-plus-function limitation does not extend to all means for performing a certain function. Rather, the scope of such claim is sharply limited to the structure disclosed in the specification and its equivalents." *J & M Corp. v. Harley-Davidson, Inc.*, 269 F.3d 1360, 1367 (Fed.Cir.2001).

"Claim construction of a means-plus-function limitation includes two steps. First, the court must determine the claimed function. Second, the court must identify the corresponding structure in the written description of the patent that performs that function." *Applied Med. Res. Corp. v. United States Surgical Corp.*, 448 F.3d 1324, 1332 (Fed.Cir.2006) (interim citation omitted).

[T]he second step ... begins with determining whether the accused device or method performs an identical function to the one recited in the claim. If the identical function is performed, the next step is to determine whether the accused device uses the same structure, materials, or acts found in the specification, or their equivalents.<sup>FN3</sup> Whether an accused device or method infringes a claim with a s. 112, para. 6 limitation, i.e., whether it performs the identical function with the same structure, materials, or acts described in the specification or an equivalent thereof, is a question of fact.

FN3. "The doctrine of equivalents prevents an accused infringer from avoiding infringement by changing only minor or insubstantial details of a claimed invention while retaining their essential functionality." *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1424 (Fed.Cir.1997). In the context of section 112, however, an equivalent results from an insubstantial change which adds nothing of significance to the structure, material, or acts described in the patent specification." *Valmont Indus., Inc. v. Renike Mfg. Co.*, 983 F.2d 1039, 1043 (Fed.Cir.1993).

*IM Tech., Inc.*, 206 F.3d at 1430 (interim citations omitted) (alterations added).

"If the court determines that a claim is not 'amenable to construction,' then the claim is invalid as indefinite under 35 U.S.C. s. 112, para. 2." *Honeywell Int'l, Inc. v. Int'l Trade Comm'n*, 341 F.3d 1332, 1338 (Fed.Cir.2003). "The definiteness requirement of s. 112, para. 2 focuses on whether the claims, as interpreted in view of the written description, adequately perform their function of notifying the public of the [scope of the] patentees' right to exclude." *Id.* (interim quotations omitted) (alteration in original). "Because a claim is presumed valid, a claim is indefinite only if it is insolubly ambiguous, and no narrowing construction can be properly be adopted." *Id.* at 1338-39 (interim quotations omitted).

With the foregoing framework for analysis in mind, the Court turns to an examination of the claims in

dispute, FN4 addressing each patent in term and referring to the claims by the labels used by the parties.

FN4. The parties were able to resolve their disagreements about many of the claims originally submitted as requiring construction.

## *Discussion*

### *I. The '730 Patent.*

#### **A. Ref. No. 6 "Unique voting session identifier," "voting session identifier," "unique identifier for the voting session" and "identifier for the voting session."**

These terms and phrases are recited or referred to in Claims 1, 23, 42, 48, 71, 76, 78, 80, 83, and 94 of the '730 Patent.

(1) *Unique*. The term "unique" is included in each of the above-listed claims; the parties disagree on its meaning. Defendants construe "unique" to mean "random and non-repeating within an election." Plaintiff defines the term as "a random or pseudo-random number (alphanumeric character or symbol) or number randomly chosen from a unique sequence of numbers." The dispute appears to be that, according to Plaintiff, the term "unique" does not require randomization, and, according to Defendants, it does. All parties agree that the term includes non-repeating.

Plaintiff's position is bolstered by the language of Claim 71 describing "identifier for the voting session" as "unique, randomized, and does not identify a voter." The language of the patent therefore demonstrates that unique and random are two different and separate qualities. For example, numbers 1, 2, and 3 can be randomly assigned to 100 people, but all those assigned a number 1 cannot be found to hold a unique number.

As noted above, a dictionary is permissible extrinsic evidence in claim construction as long as the dictionary definition does not conflict with the definition of the term as used in the patent language. *See Interactive Gift Express, Inc.*, 256 F.3d at 1332 n. 1. Unique is not necessarily a technical term. When used as an adjective, it is defined as "[o]f which there is only one; one and no other; single, sole, solitary." *Oxford English Dictionary*, <http://www.oed.com/cgi/entry> (last visited August 15, 2007).

For the foregoing reasons, the Court agrees with Plaintiff's proposed construction of the term "unique."

(2) *Voting Session Identifier*. This term is also used in each of the above-listed claims in the '730 Patent. The dispute about its construction is simple, yet significant.

Defendants contend that the voter takes away the voter identifier or voting session identifier at the end of the voting session. Plaintiff argues that certain embodiments *permit* the voter to take the voting session identifier away at the end of the session, but it is not a required element of the contested claims. Plaintiff asserts that each of the four phrases listed above are noun phrases and do not include the verbs "take" or "remove."

In support of their respective positions, the parties cite the background section of the '730 Patent. Column 1,

lines 35-43 of that patent explain that previous electronic voting machines did not allow or provide any method by which a voter could personally check his or her vote, thereby increasing voter confidence. Column 1, lines 46-48 further describe the "particular" concern with electronic voting machines that, because of the intangible nature of records stored in electronic and magnetic form, an individual's vote could be altered without "leaving any evidence thereof." These concerns are repeated in Column 2, lines 6-21.

In support of its construction, Plaintiff directs the Court to the third embodiment as set out in Column 3, lines 19-30, describing five steps as an aspect of the invention. Plaintiff argues that there is no requirement in this embodiment for taking the voting session identifier. The last step is "storing the voting record including the voting session identifier and the voting selections in *a tangible medium separate from the memory*." (Col.3, 11.28-30.) The words of the claim themselves contradict Plaintiff's construction.

Additionally, the preferred embodiment section of the patent includes indications that the voting session identifier is to be provided to the voter. Column 6, lines 27-31 provide that there are three separate and independent records of the randomly assigned voting session identifier: "one stored in the memory (memories) of voting machine ..., one stored in the memory of smart card ..., and one printed of [sic] the voting receipt[.]" All three "identify the voting record of the particular voter by the same unique voting session identifier." (Col.6, 11.54-59.) And, the voting session identifier is stored after the voting session and is provided to the local printer, which, in turn, provides a tangible record *to the voter in the form of a printed receipt*. (Col.7, 11.9-14.) "Note that where the results are published as individual voting records with the voting session identifier associated therewith, the results are 100% transparent because each individual voter may use the voting session identifier printed *on his tangible receipt* to check the voting record posted against that on the printed receipt." (Col.7, 11.56-62.) (Emphasis added.) Also, the vote results, as explained in the patent, may be made available on the Internet, allowing a voter to log on and use the unique voting session identifying number on the voter's receipt to verify his or her vote. (Col.8, 11.27-36.) In Column 14, the patent states that voter may keep the printed record with the voting session identifier for his or her own reference. (Col.14, 11.36-43.) There is also a description of a "corrective voting session" which allows an election official to void an individual's voting record and allows the voter to repeat the voting process. (Col.15, 11.14-25.) Without a printed receipt containing the voting session identifier, the voter could not confirm that the change was actually made by the official. This is further evidence of the intention of the patent to provide a voting session identifier to the voter after his or her vote is completed.

Column 16, lines 35-41 again provide that the unique voting session identifier may be published or posted in a public location and on the Internet. *See also* Col. 18, 11. 20-26 (similar provisions). Without the voting session identifier, the voter would have no means to confirm his or her vote.FN5 Column 23, lines 5-20 provide that all of the voting records and voting session identifiers are stored and tabulated at the close of voting and are combined at the election headquarters. "All voting records, voting session identifiers, and tallies thereof are made public with reference to each voter's randomly generated serial number (voting session identifier) for 100% transparency of the voting." (Col.23, 11.17-19.) "The *printed-out receipt ... is retained by the voter* for reference and for checking his or her vote against the final posted voting tallies which include the voters' identifying numbers (voting session identifier)." (Col.23, 11.29-36.) (Alteration and emphasis added.)

FN5. Plaintiff cites Column 7, lines 56-62; Column 16, lines 35-41; Column 18, lines 23-26; and Column 21, lines 59-62 as evidence that publication is optional. The term "publication" as used in these portions of the patent, however, refers to the publication of the voting results, which in turn require the publication of

the voting session identifier. This allows the voter to confirm his or her vote by using the voting session identifier provided the voter following the voting session. Column 20, lines 25-33, also cited by Plaintiff, refer to an optional serial number apart from the voting session identifier.

Thus, the description of the patent makes it clear that the inventor intended to create a voting system that promoted confidence in the voting experience. The inventor repeatedly stressed that the use of the voting session identifier retained by the voter is means to gain this confidence. A major tool in the '730 Patent to create this confidence is the ability of the voter to compare or check his or her vote with the published results of the vote. Without some identification number or identifying information on a receipt which is mirrored in the vote tally, the voter cannot confirm his or her vote. To now argue that distribution of the voting session identifier to the voter is optional flies in the face of the description of the invention.

As noted above, "the specification is always highly relevant to the claim construction analysis" and "is the single best guide to the meaning of a disputed term." *Honeywell Int'l, Inc.*, 452 F.3d at 1318 (interim quotations omitted). Moreover, when the patentee "demean[s]" a feature in the description of his or her patent, it can be concluded that the patentee disavows that feature from the scope of the patent's claims. *Id.* at 1319. Here, the patentee criticizes previous voting events whereby the voter was not provided a means to personally check his or her vote cast. The specification and description of the invention provide the cure to that problem through the use of the voting session identifier on a printed receipt provided to the voter as a way for "personal checking of votes cast." (Col.1, 11.42.)

For the foregoing reasons, the Court accepts Defendants' proposed construction of the term "voting session identifier" and construes the term set forth in Ref. No. 6 as follows:

**A random or pseudo-random number (or alphanumeric character or symbol) or number randomly chosen from a unique sequence of numbers assigned to a particular voting session which the voter takes away at the end of the voting session to enable the voter to identify her voting record from among the voting results published for that particular election.**

**B. Ref. No. 7 "Wherein the unique voting session identifier is unrelated to a particular voter's personal identity."**

This phrase is recited in Claim 1 of the '730 Patent.

Plaintiff proposes the following construction: "The unique voting session identifier consists of a random or pseudo-randomly chosen number." Defendants, on the other hand, argue that the term does not require a construction separate and apart from the definition of unique and voting session identifier as set forth in the previous claim.

The patentee on several occasions informs us that the voting session identifier cannot be associated with the personal identify of the voter. ( *See* Col. 16, 11. 58-59; Col. 8, 11. 43-45; Col. 8, 11. 55-58; Col. 8, 11. 65-67; Col. 10, 11. 47-49; Col. 20, 11. 11-20; Col. 20, 11. 25-30; Col. 24, 11. 1-7.) Based upon the discussion in the previous claim, it appears to the Court that the inventor was concerned about the anonymity of the voter as related to the voting session identifier. Therefore, this feature should be included in the construction of this term.

For the foregoing reasons, the Court has construed the term in Ref. No. 7 as follows:

**"The unique voting session identifier consists of a random or pseudo-randomly chosen number which is unrelated and untraceable to the voter's identity."**

#### **C. Ref. No. 8 "Provides" and "Providing."**

These terms are recited in Claims 1, 21, 42, 49, 54, 82, and 83.

The parties agree that the terms "provides" or "providing" as used in Claims 1, 42, and 83 mean "generating or creating." Defendants propose that the same construction should also be applied to the terms as used in Claims 21, 49, 54, and 82. Plaintiff contends that in the latter claims the terms mean "making available a tangible medium with a voting record and/or a unique voting session identifier for review."

The disputed terms used in Claims 1, 42, and 83 each involve supplying a voting session identifier and, in Claim 1, a voting record. In Claims 21, 49, 54, and 82, the term refers to supplying a receipt or paper.

There is "a 'presumption that the same terms appearing in different portions of the claims should be given the same meaning unless it is clear from reviewing the specification and prosecution history that the terms have different meanings at different portions of the claims.'" *PODS, Inc.*, 484 F.3d at 1366 (quoting *Fin Control Sys. Pty. Ltd.*, 265 F.3d at 1318). Nothing cited in Plaintiff's supporting evidence makes it clear to the Court that the terms have different meanings when used at different portions of the patent. In the context of the disputed claims, generating or creating is a logical and rational meaning for "provides" and "providing."

Accordingly, the Court construes the terms "provides" and "providing" in Ref. No. 8 to mean **"generating" or "creating."**

#### **D. Ref. No. 9 "Portable tangible medium."**

This phrase is recited in Claims 1, 94, and 96.

In the patent specification, the patentee expresses concern over the nature of election records "which are intangible and can be changed without leaving any evidence thereof." (Col.1, 11.46-48.) Intangible electronic magnetic records may be altered intentionally or accidentally without any evidence of such alteration. (Col.2, 11.16-21.) Concerns about such alterations repeated throughout the prosecution history. (Pl.Exs.F, G.) The same prosecution history provides that the tangible medium includes a "portable non-volatile electronic memory [ *e.g.*, a smart card] or a portable printed memory [ *e.g.*, a printed receipt] as well as other tangible medium that become independent of the means that stores information for one voting session therein." (Defs. Ex. 4b at 22.) FN6 The term "portable tangible medium" as used in Claims 1, 94, and 96 refers to the storage of the voting record and the voting session identifier in the medium, separate from the memory. This, in turn, will accomplish the goals set out above—a tamper-proof voting record.

FN6. This quotation appears one page prior to Plaintiff's Exhibit G, which is on page 23 of Defendants' Exhibit 4b.

The Court agrees that defining "tangible" as "non-intangible" is not useful, and the parties appear to have

agreed on the term "portable."

For the foregoing reasons, the Court construes the term "portable tangible medium" in Ref. No. 9 as follows:

**A non-volatile storage medium ( e.g., printed receipt and/or a smart card) separate from the memory of the voting machine (and thus portable) in which the records stored and contained therein if changed would leave evidence of that change.**

**E. Ref. No. 10 "A memory coupled to said processor for storing the voting record and the unique voting session identifier for each voting session; and" or "memory for storing a voting record of each one of a number of voting sessions."**

These phrases are recited in Claims 1, 21, 23, 76, 80, and 82.

Claims 1, 23, and 80 provide for the storage of the voting record and the voting session identifier. Claims 21, 76, and 82 provide for the storage of the voting record. It is Plaintiffs position, therefore, that this difference requires two separate definitions. Defendants disagree.

Plaintiff cites Application of Roller, 613 F.2d 819 (C.C.P.A.1980), in support of its position that Claim 21's language for storing just the voting record is the language of an originally filed claim, and "original claims constitute their own description." *Id.* at 823. When an applicant adds a claim or amends the specification after the original filing date, "the new claims or other added material must find support in the original specification." *TurboCare Div. of Demag Delaval Turbomachinery Corp. v. General Elec. Co.*, 264 F.3d 1111, 1118 (Fed.Cir.2001) (citing *Schering Corp. v. Amgen Inc.*, 222 F.3d 1347, 1352 (Fed.Cir.2000)). When construing a claim, the Court should consider the prosecution history which often informs the meaning of claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in its prosecution narrowing its scope. *Aero Products Int'l, Inc.*, 466 F.3d at 1010. "In the course of prosecuting a patent application, a patentee may redefine a claim term." *Arlington Indus., Inc.*, 345 F.3d at 1328. "An amendment or argument made in the course of prosecution may also serve as a disclaimer of a particular interpretation of a claim term." *Id.* (citing *Ekchian*, 104 F.3d at 1304).

Here, in the response to the final official action filed August 24, 2004, Plaintiff argued that "[b]ecause the voting session identifier is stored with or as part of the voting record in both the voting machine memory and in the tangible medium ..." a vote by vote audit is available. (Defs. Ex. 4d at 24.) This description of the invention is evidence that the inventor intended the memory device to store the voting record, *including* the voting session identifier.

For the reasons set forth herein, the Court construes the terms contained in Ref. No. 10 as follows:

**A commonly used internal computer component (here, within the voting machine or system) which is capable of storing the voting record and the voting session identifier and interacts with the processor.**

**F. Ref. No. 11 "Voting record(s)."**

This term is recited or referred to in Claims 1, 5, 17, 20-24, 29, 32, 38-40, 42, 48, 49, 54, 55, 57, 71-77, 80, 82, 85, 94, 96, 102, and 103.

In Claims 1, 5, 20-24, 40, 77, 80, 82, 85, 102, and 103, there is a reference to the voting record *and* the

voting session identifier. In Claims 42, 48, 49, 71 -74, 94, and 96, there is a reference to the voting record *including* the unique voting session identifier. Claims 17, 29, 32, 38, 39, 54, 55, and 57 refer only to the voting record. The parties agree that the term voting record includes the "voter's voting selections/choices." The disagreement is whether the unique voting session identifier should be contained in the definition of the term "voting record."

The description of the invention provides that the memory must store the voting record *and* the voting session identifier. (Col. 2, 11. 65-67; Col. 3, 11. 1-3.) The separation of these two terms is repeated throughout the description and specification of the invention. ( *See* Col. 3, 11. 13-18; Col. 6, 11. 9-24; Col. 13, 11. 20-24.) The use of the word *and* indicates that the two terms-voting record and voting session identifier-are different items.

Defendants cite Column 6, lines 9-24 in support of their position; however, the Court finds this citation to favor Plaintiff's argument. "Each voting record PR [tangible voting record]-1, PR-2, ... PR-n includes the randomly assigned identifying or serial number unique to the particular voting session and a listing of the votes that the voter has cast (the voting record) that is identical to the voting record and identifying number stored in voting machine VM." (Col.6, 11.18-24.) (First alteration added.) The citation clearly indicates that there is a difference between the voting record and the voting session identifier. Defendants also cite the prosecution of the patent which provides that "[b]ecause the voting session identifier is stored with or as part of the voting record...." (Def. Ex. 4d, Response to Final Office Action, Aug. 24, 2004, at 24.) This citation is not clear evidence that the voting session identifier and the voting record are the same.

Because the majority of the time the patent refers to the voting record and the voting session identifier as two separate items, the Court will adopt Plaintiff's construction. Accordingly, the Court construes the term "voting record(s)" in Ref. No. 11 as follows: "**The voter's voting selections/choices.**"

#### **G. Ref. No. 12 "Voting session."**

This term is recited or referred to in Claims 1, 5, 17, 20, 24, 40-45, 48, 49, 71-74, 76-89, 94, 96, 102, and 103.

Plaintiff proposes that this term be construed as follows: "The time at which a voter makes his or her voting selections on the voting apparatus." The problem with this construction is that Plaintiff does not describe the event in the patent description in that manner. Column 11, lines 46-51 provide that "preferably" the voting machine displays the voting record of the voter requiring at least one confirmation and "preferably" a second confirmation "in order to end a voting session." In even stronger language, the patent provides that "before a voting session is complete the voter confirms the voting selections he has made." (Col.17, 11.29-30.)

There should be no dispute here. The language in the specification and description of the patent is clear. The term "voting session" as contained in the above-listed claims is construed as: "**The period during which a voter makes his or her voting selections on the voting apparatus, ending when the voter confirms the voting selections.**"

**H. Ref. No. 13 "Means coupled to said processor for storing the voting record and the unique voting session identifier for each voting session in a portable tangible medium separate from said memory" or "means coupled to said processor for storing the voting record and the unique voting session**

**identifier for each voting session in a tangible medium separate from said memory" or "means for causing the computer to store the voting record including the voting session identifier and the voting selections in a tangible medium separate from the memory" or "means for storing the voting record including the voting session identifier and the voting selections in a portable tangible medium separate from the memory."**

These phrases are recited or referred to in Claims 1, 23, 24, 39, 71, and 94.

As previously discussed, claim construction of a means-plus-function limitation requires two steps. First, the Court must determine the claimed function; second, the Court must identify the corresponding structure of the patent that performs that function. *Applied Med. Res. Corp.*, 448 F.3d at 1332. *Accord IMS Tech., Inc.*, 206 F.3d at 1430.

Here, the parties agree with the language defining the function, language which is a verbatim recitation of the provided function in the claims. They disagree, however, with the structure; more specifically, they disagree on the scope of the term "printer."

This analysis must begin again with the patentee's interest and intention to avoid tampering and create confidence in the voting procedure. (Col. 1, 11. 46-49; Col. 2, 11. 15-22.) To avoid the possibility of additional sources of information other than the memory and the voter receipt, the patent teaches there is a concern over using printers which retain a record of the data printed, i.e., a printer which uses a daisy wheel or ribbon or sheet-type ink source "from which information printed may be extracted or reconstructed." (Col.11, 11.28-37.) Generally, the description of the invention advises that such conventional printers as a "thermal printer, a dot matrix printer, an ink-jet printer, a bubble jet printer, a laser printer and the like" may be used. (Col.11, 11.35-41.) Other references to the intrinsic evidence simply refer to the printer without further description.

Plaintiff argues for a definition of "printers or other devices that output a non-intangible record (including, but are not limited to [the afore-mentioned conventional printers] )." Defendants argue that this construction is improper, citing *J & M Corp.*, 269 F.3d at 1367, in which the court held that the "scope of a properly construed means-plus-function limitation does not extend to *all* means for performing a certain function." (Emphasis added.) The Court disagrees. The list of printers in Plaintiff's structural language includes those printers that do not retain a record of the data printed. This is not an expansion of the structure, but is an explanation of the structure disclosed by Plaintiff in the specifications. The scope of the claim language "is sharply limited to the structure disclosed in the specification and its equivalents." *Id.* For the foregoing reasons, the Court construes the terms as set out in Ref. No. 13 as follows:

***Function:* Storing the voting record and the unique voting session identifier for each voting session in a portable tangible medium separate from the memory.**

***Structure:* The structures recited in the specification for performing this function are: (a) printers that retain no record of the data printed (including, but not limited to, a thermal jet printer, a dot matrix printer, an ink-jet printer, a bubble jet printer, a laser printer, and the like); (b) smart card encoders and their equivalents.**

**I. Ref. No. 14 "Issue," issued" and "issuing."**

These terms are recited or referred to in Claims 1, 23, 42, and 71.

In construing these terms, it is difficult for the Court to ignore the language in the prosecution history of this patent reading that "when issued, the tangible medium is removed or decoupled from the means that stores information therein, and so each tangible medium provides an independent and audible record of one voting session." (Def. Ex. 4b at 21; Amendment under 37 C.F.R. s. 1.111 (Oct. 28, 2003)). The medium referred to is the smart card and the printed paper. (Col. 17, 11. 59-61; Col. 20, 11. 31-37.)

The Court construes the terms "issue," "issued" and "issuing" in Ref. No. 14 as:

**Remove or decouple the tangible medium from the means that stores the information therein, so the tangible medium provides an independent record of a voting session.**

**J. Ref. Nos, 15, 22, and 24 "Printer."**

This disputed term is recited in or referred to in Claims 5, 21, and 24.

The parties have agreed that Ref. Nos. 15, 22, and 24 should be grouped together because they can be decided on the construction of the single term "printer."

The Court adopts the reasoning set forth in Ref. No. 13, discussing the inventor's intention that the printer provide no additional record of the voting event. The Court construes the term "printer" as follows:

**A printer that retains no record of the data printed (including but not limited to a thermal jet printer, a dot matrix printer, an ink-jet printer, a bubble jet printer, a laser printer, and the like).**

**K. Ref. No. 16 "Smart card" and "smart card for storing."**

These terms are recited or referred to in Claims, 6, 7, 9, 19, 20, 22, 24, 25, 26, 27, 29, 40, 44, 45, 46, 48, 54, 55, 73, and 77.

As to these terms, the parties disagree about the *size* of a "smart card." Column 4, lines 22-37 describes a smart card's function and uses. It is of "convenient size for handling and for printing desired indicia or other information on the surfaces thereof." (Col.4, 11.26-28.) "Also typically, the card is about the size of a conventional credit card or the like, but may be larger or smaller." (*Id.* 11. 33-35.) Smart cards may be referred to as "chip cards" or "access cards." (*Id.* 11. 35-37.)

The key word is "card," as in "credit card." The description allows for larger or smaller sizes, but the term "card" limits the range. Larger or smaller, the item is a "card."

For these reasons, the Court construes the term "smart card" in Ref. No. 16 as: **"A credit card-sized and shaped, portable memory device, separate and independent from the memory of the voting machine."**

**K. Ref. No. 18 "Means for generating the voting session identifier."**

This phrase is recited or referred to in Claims 15 and 16.

This dispute in construction raises another means-plus-function limitation question. Again, the parties agree on the function-"generating the voting session identifier"-and disagree about the structure. The parties

disagree about whether "generators" should be included in the construction of the structure; Plaintiff argues yes.

The teachings of the specification provide that "the processor also includes or has associated with it a random number generator or pseudo-random number generator or a list or sequence of unique numbers...." (Col.5, 11.58-61.) Therefore, the generator is included with or associated with the processor. The processor port "includes a function for providing unique voting session identifiers for each voting session, for example, a random-number or random-character generator RNG or a look-up table or other suitable generator." (Col.9, 11.20-23.) This language indicates that the processor includes the generator. Claim 15 of the patent states that the processor with the voting apparatus described in Claim 1 "includes means for generating the voting session identifier." Claim 16, in turn, states that the voting apparatus of Claim 15 includes "at least one of a random number generator, a pseudo-random number generator, a random character generator, a pseudo-random-character generator, and a look-up table." Claim 21 states, in relevant part:

21. In combination with an electronic voting machine comprising a processor, a display, a voter interface and at least one memory for storing a voting record of each one of a number of voting sessions,

a generator of a voting session identifier for each voting session, which voting session identifier is unrelated to the personal identity of a particular voter conducting that voting session, and ...

The language "in combination with" is evidence that the generator must operate along with the processor. The phrases "has associated with it," "in combination with," and "includes or has associated with it" clearly indicate a reliance on the processor.

The case law cited by Plaintiff is unavailing. In *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339 (Fed.Cir.1999), the court noted that the parties agreed on the structure corresponding to the function of the disputed limitation, i.e., "a microprocessor programmed to perform random number generation." *Id.* at 1349. In the instant case, the parties do not agree. Moreover, the Court is bound by the description, specification, and intrinsic evidence regarding the construction of claims herein. What appears in an unrelated patent is of no assistance to the Court in this case.

For the reasons set forth herein, the Court construes the phrases set out in Ref. No. 18 as follows:

***Function:* "generating the voting session identifier"**

***Structure:* The structures that perform this function are processors which have associated with them or in combination with them a random number generator, pseudo-random number generator, random character generator, pseudo random character generator, and/or a look-up table.**

**L. Ref. No. 21 "Generator of a voting session identifier for each voting session."**

This phrase is recited or referred to in Claims 21, 76 and 82.

Defendants refer the Court to the previous argument regarding generators. That argument, however, is based upon a means-plus-function limitation. The instant claim construction is not. Here, the Court is asked to construe the phrase set forth above and the use of the term "generator."

As noted by Plaintiff, the 730 Patent provides numerous examples of generators in both the specification and in the claims. ( *See* Col. 5, 11. 58-62; Col. 19, 11. 19-23; Col. 24, 11. 1-19; Claims 16, 21, 82.) These examples include random number generators, pseudo random number generators, and random character generators. The Court finds Plaintiff's construction to be a fair description of the claim. The Court, however, finds Plaintiff's language "and the like" excessively broadens the definition. Moreover, the term "for each voting session" is contained in the language of the relevant claims and should be included in the claim construction.

Therefore, the Court construes the term contained in Ref. 21 as follows:

**A component of the voting machine (such as a processor, random number generator, processor with a random number generator) provides a random or pseudo-random, unique identifier for each voting session .**

**M. Ref. No. 27 "Tangible receipt" or "printed receipt" or "printed paper."**

These terms are recited or referred to in Claims 21, 49, 54, 55, 72, 77, 82, 83, 84, 85, 102, and 103.

The dispute as to these terms is whether, as argued by Plaintiff, "printed receipt" has one definition and "tangible receipt" and "printed paper" have another or, as argued by Defendants, all three terms have the same definition. Additionally, as discussed above, there is an underlying dispute whether the voters retain the receipt.

Again, the Court must begin with the inventor's goal to provide a tamper-proof voting system encompassing a verification system. (Col. 1, 11. 35-49; Col. 2, 11. 6-21.) Voter confidence is maintained because a voter can compare his or her individual printed receipt with the unique voting session identifier to the Internet election website listing the votes, voting record, and voting results. (Col.18, 11.37-53.) The patent teaches that there are three separate and independent identical records of the voters' vote: one in the stored memory of the voting machine, one in the memory of the smart card, and one printed on the voting receipt. (Col.6, 11.27-31.) "Each voter deposits his smart card SC into a secure collection box ... retains the printed voting receipt," Col. 6, 11. 47-51, provided to the voter at the conclusion of the voting session by the "local printer," Col. 7, 11. 9-14. The voting session identifier is printed on that receipt. (Col.7, 11.19-21.) The patent teaches that the local printer is of the type that retains no record of the printed data. (Col.11, 11.28-37.) The patent later states that "[t]he tangible receipt device provides a tangible receipt such as a printed receipt." (Col.17, 11.54-55.) Therefore a tangible receipt and printed receipt, according to the instructions of the patent, are the same item.

Claim 67 provides that the voting records, including "the voting selections of a particular voter and that voter's random voting identifier, are published or posted on the Internet, thereby allowing the voter to compare his or her voting session identifier with the posted result. With the exception of Claim 55, each of the Claims listed in this section provide that the tangible receipt, the printed receipt, and the printed paper include the voting record and the voting session identifier. All three items are treated the same in the Claim language.

The term "printed paper" appears only one time in the specification, when modifying "receipt" in Column 10, line 15. (Col.10, 1.15.) The term reappears in the contested Claims 102 and 103 in the context of

directions for "collecting" the printed paper in those Claims. This is inconsistent with other references to the printed receipt and the tangible receipt.

Defendants argue, without contradiction, that Claims 102 and 103 were added three years after the original application for the '730 Patent in a preliminary amendment dated November 17, 2003. (Def's. Response Brief at 25.) As noted above, when the patent applicant adds a Claim after the original filing date, the new Claim must find support in the original specification. *Turbocare*, 264 F.3d at 1118. Plaintiff refers the Court to no such support. Moreover, the term "printed paper" is used in the specification to modify "receipt." There is sufficient evidence in the specification and the patent Claim to convince the Court that the receipt is provided to the voter at the conclusion of the voting session. There is no evidence from Plaintiff to the contrary.

In support of its argument to the contrary, Plaintiff cites *In re Wright*, 866 F.2d 422 (Fed.Cir.1989), discussing the "description requirement" of 35 U.S.C. s. 112, para. 1. *Id.* at 424-25. That paragraph "opens with the words: 'The specification shall contain a written description of the invention....' " *Id.* at 424 (quoting s. 112, para. 1.) An issue in that case was whether the phrase "not permanently fixed," a phrase that did not appear in the specification as originally filed, was properly rejected under s. 112. *Id.* at 423-25. The court framed the question as follows: "When the scope of a claim has been changed by amendment in such a way as to justify an assertion that it is directed to a *different invention* than was the original claim, it is proper to inquire whether the newly claimed subject matter was *described* in the patent application when filed as the invention of the applicant." *Id.* at 424. The exact words, i.e., "not permanently fixed," need not be used in the specification if the specification, read "in the light of which all that the claims say must be construed" and considered "against the background of the prior art," convinces the court "that the process of the claims, containing the words 'not permanently fixed,' is described in the specification." *Id.* at 425. Although "the claimed subject matter need not be described in *haec verba* in the specification," the specification as originally filed nonetheless "must convey clearly to those skilled in the art the information that the applicant has invented the specific subject matter later claimed." *Id.* at 424, 425 (interim quotations omitted).

In the instant case, the specification in the '730 Patent does not satisfy this description requirement as it relates to the "printed paper"; therefore, the Court finds the term to be consistent with other references to the printed receipt and the tangible receipt. Additionally, the Court disagrees with Plaintiff's argument relating to Plaintiff's Group Exhibit I. As stated above, there are numerous references to the receipt being retained by the voter in the inventor's description of his invention.

For the reasons set forth herein the Court construes "tangible receipt," "printed receipt," and "printed paper" as follows:

**Tangible receipt, printed receipt, and printed paper mean a reviewable printout of the voters' voting selections or choices or a corresponding voting session identifier that is retained by the voter.**

**N. Ref. No. 38 "Optically Readable."**

This term is recited or referred to in Claims 82, 83, 84, and 85.

According to Plaintiff, the term "optically readable" means capable of being read by an optical scanner. Defendants counter that the definition of the term encompasses capable of being read by humans and by a

mechanical device.

As noted by Plaintiff, the background portion of the 730 Patent describes the process of counting votes by optical scanning or mechanical scanning. (Col.1, 11.23-27.) The specification provides that the voting records may be stored in an electronically or optically readable media. (Col.22, 11.50-54.) The Claims in dispute each provide for specific voting information to be on printed paper that is "human readable and/or optically readable." Claims 82, 83, 84, and 85. These references in the specification and in the Claims meet the requirements of *In re Wright*, 866 F.2d at 425, because the term "optically readable" is clearly conveyed in the patent language and its specification. Moreover, this term is used throughout the patent description and in the patent specification. And, the ordinary meaning of the term is clearly conveyed by the Plaintiff's definition.

The Court construes the term "optical readable" as: "**Capable of being read by an optical scanner.**"

**O. Ref. No. 39 "Means for displaying on the display during each voting session voting information for all offices, referenda, and/or questions all at one time."**

This phrase is recited or referred to in Claim 86.

This Claim raises another means-plus-function dispute. Again, the parties agree on the function of the term-"displaying on the display during each voting session voting information for all offices, referenda, and/or questions all at one time." (Jt. Cl. Const. and Prehrg. Stat. Ex. A at 32.) The parties disagree on the structure that provides this function. Defendants (1) object to Plaintiff's use of "include," i.e. "The structure recited for performing this function includes ..."; (2) argue that the phrase "a set of illuminated buttons" should be included in the structure; and (3) argue that application software must be specified.

"An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. s. 112, para. 6.

The specification in this patent provides that the "[d]isplay unit DU may be of any suitable type, such as a conventional cathode ray tube or computer display, an LCD display, a touch-screen display or other suitable device, for displaying alphanumeric and/or graphical information, or a set of illuminated buttons, as desired, and is typically connected to processor P via cabling." (Col.10, 11.4-12.) Plaintiff concedes that the "illuminated buttons" should be added to the structure; consequently, Plaintiff's proposed construction complies with s. 112, para. 6. The structure is described in the specification and is consistent with the holding in *J & M Corp.*, 269 F.3d at 1367, that the scope of the claim language in a means-plus-function claim be sharply limited to the structure described in the specification.

The Court finds such support in the specification which provides for a processor in conjunction with ("typically connected to processor") the computer display listed above. Voter interface may be a standard or custom keyboard, dedicated vote buttons, switches similar to conventional mechanical voting machines, or touch-screen interface associated with a display unit and is "typically connected to processor P via cabling." (Col.9, 11.58-63.)

Defendants cite a portion of the specification describing storing information or smart card decoding devices.

(Col. 5, 1. 32 to Col. 6, 1. 13.) There is a description of specific software to be utilized in this function; however, this portion of the patent description does not concern the display unit.

For the foregoing reasons, the Court construes the term in Ref. No. 39 as follows:

***Function:* Displaying on the display during each voting session voting information for all offices, referenda, and/or questions all at one time.**

***Structure:* Includes a processor in conjunction with a conventional cathode ray tube or computer displays, LCD displays, touch-screen displays or other suitable devices that can display alphanumeric and/or graphical information or a set of illuminated buttons. Displays can also include Braille devices, aural information via headphones, or other devices specially suite for people with handicaps.**

**P. Ref. No. 40 "Means for displaying on the display during each voting session voting information for all offices, referenda, and/or questions sequentially one office, referendum or question at a time."**

This phrase is recited in Claim 86.

The parties agree on the function language, and disagree as to structure. For the same reasons set forth in Ref. No. 39, the Court adopts Plaintiff's Claim and construes the structure as follows.

***Function:* Displaying on the display during each voting session voting information for all offices, referenda, and/or questions sequentially one office, referendum, or question at a time .**

***Structure:* Includes a processor in conjunction with a conventional cathode ray tube or computer displays, LCD displays, touch-screen displays or other suitable devices that can display alphanumeric and/or graphical information or a set of illuminated buttons. Displays can also include Braille devices, aural information via headphones, or other devices specially suited for people with handicaps.**

***II. The "4 Patent.***

**A. Ref. No. 56 "Imaging," "Image," and "Imaged."**

These terms and phrases are recited or referred to in Claims 1-3, 5, 7, 13, 18-20, 23, 30-32, 42-44, and 49.

Plaintiff contends that these terms should be construed as "electronically reproducing a reviewable representation (image, not just data) of an optically scanned region of a document or portion of a document." Defendants propose "capturing data from a ballot in a pixilated or bitmapped format."

This is a significant dispute between the parties and the arguments are multidimensional. Citing Honeywell Int'l, Inc., 341 F.3d at 1338-40, Defendants first argue that the above terms are not amenable to construction because they are indefinite and invalid under to 35 U.S.C. s. 112, para. 2. "The definiteness requirement of s. 112, para. 2 'focuses on whether the claims, as interpreted in view of the written description, adequately perform their function of notifying the public of the [scope of the] patentee's right to exclude.'" Id. at 1338 (quoting S3 Inc. v. nVIDIA Corp., 259 F.3d 1364, 1371-72 (Fed.Cir.2001)) (alteration in original). "Because a claim is presumed to be valid, a claim is indefinite only if the 'claim is insolubly ambiguous, and no narrowing construction can properly be adopted.'" Id., 341 F.3d at 1338-39 (quoting Exxon Research & Eng'g Co. v. United States, 265 F.3d 1371, 1375 (Fed.Cir.2001)). The Court does not find the terms

"image," "imaging" or "imaged" to be insolubly ambiguous.

Defendants further argue that the terms "image" and "read" are used in an inconsistent manner. The Court acknowledges some overlap; however, a close look at the patent and specification language resolves the issue. Column 15, lines 2-4 provide that the ballot is "read/imaged and the voting information thereon is read/decoded." The specification described Figure 8 as comprising two separate paths—one for imaging (320a) and one for reading (320b). In addition, in the above references, imaging is associated with decoding (i.e., read/imaged-read/decoded).FN7 (Col.15, 11.2, 3.) In Figure 8, the ballots are passed through a reader (310). They either then proceed on the imaging path (320a) and are imaged and then decoded or on the reading path where they are passed through the reader and are read (320b). This demonstrates a clear difference between "image" and "read" and connects imaging to decoding. Moreover, decoding is used throughout the patent when discussing imaging. ( See Col. 15, 11. 16-32; Col. 15, 11. 51-55; Claim 3; Claim 13; Claims 31, 33, 34, 36-38.) Defendants' invalidity argument is unavailing.

FN7. The Court does not agree with Defendants' argument concerning Claims 1, 5, and 29. "Read" and "image" are not used interchangeably in these claims.

The patent specification provides that the ballot imaging process described in Figure 8 at 320a "acquire[s] an image of the voting information." (Col.15, 11.16-18.) (Alteration added.) The specification provides that the images may be stored in a suitable electronic format including ".BMP, .TIFF, or .PDF or any other suitable format." (Col.12, 11.36-49.) This is consistent with the teaching in the '313 Patent FN8 that "[t]he ballot reader produces a ballot image ... that is preferably in a pixelated or bitmapped format, *e.g.*, a TIFF or a BMP image, or other bitmapped format. Ballot images in such format may be produced directly by a commercially available office copier or scanner or may be converted to such format...." ('313 Patent, Col. 22, 1. 60-Col. 23, 11. 1-6.) As noted by Defendants, in the prosecution of the ' 313 Patent, Plaintiff distinguished it from a pending claim in another patent, "the Stewart Patent." (Defs. Ex. 6A at 31-42.) "Nothing in Stewart describes or suggests imaging a ballot or imaging a ballot in a pixelated or bitmapped format. Nothing is [sic] Stewart describes or suggests determining from an image a jurisdiction identifier and then selecting a template based thereon, or decoding voting selections from the image of the ballot." ( Id . at 35.) This is evidence of Plaintiffs reliance on the pixelated and bitmapped formats and evidence that "imaging" includes a viewable electronic reproduction of the ballots.

FN8. The parties agree that the term "image" should be construed to mean the same in both the "4 and '313 Patents.

In summary, Defendants' indefiniteness argument fails. Reading and imaging are two separate functions and are distinguishable as set out in Figure 8 and in the specification of the patent. And, as set forth above, there is support for use of the term "capturing" in the context of imaging and the ballot reader and for the need of an electronic reproduction of the ballot.

Accordingly, the Court construes the terms in Ref. No. 56 as: **Electronically capturing and reproducing images and data from a ballot in a pixelated or bitmapped format.**

**B. Ref. No. 57 "Reading," "Optically Reading," and "Read."**

These terms and phrases are recited or referred to in Claims 1, 13, 18-20, 23, 26, 30, 31, 42-44, and 49.

Plaintiff asserts that the term "reading" in Claims 1, 13, 18, and 31 should be construed as "scanning/sensing/reading" and "detecting and/or imaging" in Claims 30, 42, and 44. Plaintiff says nothing about the contested terms in Claims 19, 20, 23, 26, 42-43, and 49. Plaintiff argues that the term "reading" in Claims 1 and 31 does not require the Court to construe its meaning, yet Plaintiff proposes the above construction. Defendants, on the other hand, first argue that the contested terms are used interchangeably and such "flexibility" deprives the term of clarity; therefore, the scope of the claim using these terms cannot be ascertained. Defendants alternatively argue that the definition "capturing data from the ballot or from the image of a ballot" is appropriate in every claim in which these terms are recited.

The Court finds it instructive to analyze each disputed claim in which the contested terms appear. In Claims 1, 13, 18, 43, and 49, the term "reading" is described as "optically" reading ballots. Claims 19, 20, 23, and 26 detail the "method" of Claim 18. In Claims 1, 13, 30, 31, and 42, "reading" also includes "imaging" the ballots. In Claim 30 "reading" is "using any of a keyboard, a touch screen, a button, a switch, voice recognition apparatus, a Braille keyboard, [or] a pen with writing recognition interface." (Alteration added.) Claim 44 describes the "method" of "reading" ballots as comprising "reading each ballot" to obtain specific information such as the jurisdiction identifier and the voting selections marked thereon.

As noted above, there is a presumption that the same term appearing in different portions of the patent should be given the same meaning unless it is clear from the specification and prosecution history that the term has different meanings at different locations in the patent. *See* *PODS, Inc.*, 484 F.3d at 1366. There is also a presumption that a claim is valid and is to be found indefinite only if the claim is "insolubly ambiguous" and "no narrowing construction can properly be adopted." *Honeywell Int'l, Inc.*, 341 F.3d at 1338-39.

In reviewing the contested terms cited herein, the Court does not find their usage deprives the claims of clarity. The three terms in dispute all relate to the same functions—collecting, gathering, observing data, and then reading the data in some manner. Column 3, lines 25-28 of the specification provides that, after the ballot is marked by the voter, it is read and tabulated by a reading machine or optical reader that "reads or senses the defined mark spaces to determine" the voting selections. With respect to Figure 8, the specification describes it as "a schematic flow diagram of an example ballot reading process...." (Col.2, 11.43-44.) Figure 8 begins with "pass ballots through reader (310)" and then depicts two paths, 320a and 320b, in which the ballot is passed through to be read or imaged and decoded. At the end of paths 320a and 320b, the voting selections are tabulated (330), and the "read" ballot is stored (332). The ballots are "read" by the alternative processes in 320a and 320b. In essence, the term "reading," "optically reading," and "read" refer to the same process. Information is either scanned, read, or captured from the ballot, and, through that process, the votes are tabulated and stored. This construction is consistent with the Court's construction of the term "optically readable" in Ref. No. 38 of the '730 Patent as meaning "capable of being read by an optical scanner." The Court's construction is also consistent with that in Ref. No. 59 in the '4 Patent, wherein the terms "imaging," "image," and "imaged" are construed to mean "electronically capturing and reproducing images and data from a ballot in a pixilated or bitmapped format."

For the foregoing reasons, the Court construes the terms "reading," "optically reading," and "read" as:  
**Scanning, reading, or capturing data from the ballot or from the image of a ballot.**

**C. Ref. No. 58 "Means for imaging each paper ballot including imaging the jurisdiction identifier**

**thereof and the voting selections marked thereon."**

This phrase is recited in or referred to in Claims 1-3.

Once again, the contested term presents a means-plus-function format. Once again, the parties agree on the function of the term, i.e., "imaging each paper ballot including imaging the jurisdiction identifier thereof and the voting selections marked thereon." The parties disagree as to the structure that performs this function.

According to the specification, Figures 1, 3A, 3B, 3C, and 4 illustrate a ballot to be read by an optical reader. (Col. 2, 11. 25-26, 29-32, 33-35; Col. 3, 11. 11-12; Col. 5, 11. 41-43; Col. 6, 11. 35-37.) After the voter marks his or her voting selections on the ballot, the ballot is submitted and then is "read and tabulated, typically by a reading machine or reader that optically reads or senses the defined marked spaces..." (Col.3, 11.22-27.) The reader device reads the information and/or markings on the ballots. (Col.11, 11.49-52.) The reader device also reads the voter identifier number, including "at least the jurisdictional information fields thereof..." (Col.12, 11.20-23.) The ballot imaging process, 320a, "comprises imaging the ballot to acquire an image of the voting information thereon and then decoding a ballot identifier..." (Col.15, 11.15-21.) The specification further provides that the ballot reader "may utilize all or part of conventional ballot readers and/or may utilize parts of conventional office equipment *such as* copiers, scanners, facsimile (fax) machines, and other commercial imaging and/or scanning devices, and the like, *e.g.*, for imaging and/or optically reading the information contained on optically-readable paper ballots." (Col.14, 11.44-49.) (Emphasis added.) The specification lists specific examples of commercial imaging scanners and conventional ballot readers. (Col.14, 11.55-58).

Defendants cite Harley-Davidson, 269 F.3d at 1367, in support of their argument that the scope of the means-plus-function limitation does not extend to all means performing that function. Therefore, according to Defendants, Plaintiff's modified construction of the structure which includes a parenthetical (*i.e.*, parts of) is improper. The Court disagrees. The language is taken directly from the specification which teaches that the ballot reader may include all or part of conventional ballot readers and/or parts of conventional office equipment and lists the types of office equipment intended. The specification further gives specific examples of office equipment (copiers, scanners, and fax machines) and of conventional ballot readers, including "PAGES CAN II reader" and the SCAN-MARK ES2800 reader." (Col.14, 11.51-55).

Again, the Court finds that a combination of Plaintiff's and Defendants' proposed constructions is necessary and construes the terms as set out in Ref. No. 58 as follows:

***Function:* Imaging each paper ballot including imaging the jurisdiction identifier thereof and the voting selections marked thereon.**

***Structure:* An optical imager/reader that images a paper ballot, including the jurisdiction identifier and the voting selections, including the technology used in (*i.e.*, or parts of) conventional ballot readers (such as the PAGES CAN II from Peripheral Dynamics, Inc. and the SCAN-MARK ES2800 reader from Scantron), and/or conventional office equipment such as copiers, scanners, facsimile (fax) machines, and other commercial imaging and/or scanning devices (such as DR5020 and DR5080 from Canon Electronics, Inc. and IS330DC from Ricoh Co.), and the like.**

**D. Ref. No. 59 "Whereby the voting selections marked on each paper ballot are imaged and recorded**

**in accordance with a template corresponding to the jurisdiction identifier for that paper ballot."**

This phrase is recited in Claim 1.

According to Defendants' construction of this claim, the voting selections on the ballot are imaged in accordance with a corresponding template and recorded in accordance with the template. Plaintiff construes this term to mean that the paper ballot is imaged and *then* is recorded pursuant to the identified template. The parties agree that the voting selections are recorded pursuant to the template. The dispute, therefore, is whether the term requires that the voting selections marked on the ballot must also be imaged pursuant to that template.

Comparing Claim 2 with Claim 1's requirements is instructive. Claim 2 provides for a first optical scanner to image the jurisdiction identifier of each ballot and a second optical reader to image the voting selections in accordance with the select template. There is no such language in Claim 1. Moreover, Claim 2 is dependent upon Claim 1, and "[t]he concept of claim differentiation 'normally means that limitations stated in the dependent claims are not to be read into the independent claim from which they depend.' " *Nazomi Communc'ns, Inc. v. ARM Holdings, PLC*, 403 F.3d 1364, 1370 (Fed.Cir.2005) (quoting *Karlin Tech., Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 971-72 (Fed.Cir.1999)) (alteration added). If Defendants' construction is accepted, Claims 1 and 2 would be identical, and the doctrine of claimed differentiation would be vitiated. Moreover, Path 320a in Figure 8 teaches that the ballot is imaged (Step 321), decoded (Step 323), and then a template is selected in Step 325. After that step, the voting selections are decoded in Step 327 and recorded and stored in Steps 330 and 332. ( *See* Col. 15, 11. 16-31.) This is consistent with Plaintiffs construction of Claim 1 requiring only an imaging step. Claim 1 does not require a second optical reader. The specification of the patent support Plaintiff's construction. The ballots are imaged for the jurisdiction identifier and voting selections, and then a processor receiving the jurisdiction identifier selects a template for recording the voting selections. (Col. 2, 11. 3-10; Col. 15, 11. 2-15.)

For the foregoing reasons, the Court construes the term in Ref. No. 59 as follows:

**The voting selections on each paper ballot are imaged and the choices/selections are recorded in accordance with a selected template corresponding to the jurisdiction identifier for that paper ballot.**

**E. Ref. No. 70 "Whereby the voting selections marked on each ballot are read and recorded in accordance with a template corresponding to the jurisdiction identifier for that ballot."**

This phrase is recited in Claims 42 and 44.

The parties and the Court concur that Refs. No. 59 and 70 should be construed consistently. Accordingly, the term ins Ref. No. 70 is construed as follows:

**The voting selections marked on each ballot are read and the choices/selections are recorded in accordance with a selected template corresponding to the jurisdiction identifier for that ballot.**

**F. Ref. No. 64 "Prior to said reading and for each of a plurality of voters, producing by a voting machine a paper ballot including voting selections made by a voter.**

This phrase is recited in Claim 26.

The dispute concerning this claim is in two parts. Defendants interpret the phrase "prior to said reading and for each of a plurality of voters" to require that, prior to the reading step, a plurality of voters' paper ballots are produced. Plaintiff interprets this phrase to require the entire process to be repeated for multiple voters. The Court agrees with Plaintiff's construction because of the plain language of the claim.

The phrase "and for each of a plurality of voters" explains that the process described is applied to each individual voter. Defendants' proposal does not provide for this construction and does nothing more than repeat the phrase in their construction.

The second dispute on the claim is about the phrase "producing by a voting machine a paper ballot including voting selections made by a voter." In support of its construction, Plaintiff cites the specification providing for "[a] specialty or security-type of paper, or other medium making authentication of a printed receipt and/or ballot easier ..." and for a local printer which "prints information identifying the election district, the date and time of voting and similar information that may help to authenticate printed receipt PR and/or optical ballot[.]" (Col.11, 11.21-24.) Defendants refers the Court to Column 10, lines 31-36, which provide that the ballot may be printed in advance of an election. The claim itself provides that a voting machine produces a "paper ballot including voting selections made by the voter." (Claim 26) "In construing claims, we begin with the language of the claims themselves." North Am. Vaccine, Inc., 7 F.3d at 1575. When the meaning of the claims is in doubt, the court looks to the specification for guidance. Id. at 1576.

There is nothing in the specification that negates Plaintiff's construction. To the contrary, the specification referred to herein supports for Plaintiff's construction. When viewing the claim's clear language, the phrase "voting selections made by a voter" refers to the choices made by that voter.

Consequently, the Court construes the term in Ref. No. 64 as: **Before the reading step, a ballot is produced with the voter's choices printed thereon. The entire process is then repeated for multiple voters.**

#### **F. Ref. No. 65 "Printing the voting selections on a ballot form."**

This phrase is recited in or referred to in Claims 27, 30, and 49.

Claim 26 provides for the voting machine producing a paper ballot with the selections made by the voter printed thereon. Claim 27 is dependent upon Claim 26, and, therefore, the phrase "printing the voting selections on a ballot form" is construed to mean that the voter's choices or selections as set forth in Claim 26 are printed upon a preprinted ballot.

This phrase is construed as: **The voter's choices are printed upon a preprinted ballot.**

#### **G. Ref. No. 66 "Printing a ballot from including the voting selections."**

This phrase is recited in or referred to in Claims 27, 30, and 49.

Claims 27, 30, and 49 use the same language: "Printing the voting selections on a ballot form or printing a ballot form including the voting selections." There is little to construe. As previously discussed, the printed ballot form includes the voter's voting selections or choices. The phrase "printing a ballot form including the voting selections" is construed as: **The ballot form along with the voter's choices is printed simultaneously.**

**H. Ref. No. 69 "Means for reading each ballot including imaging a jurisdiction identifier thereof and voting selections marked thereon, wherein the jurisdiction identifier identifies the jurisdiction or jurisdictions to which each ballot pertains."**

This phrase is recited in or referred to in Claims 42 and 43.

This contested claim is another means-plus-function matter. As previously, the parties agree on the function of the term: reading each ballot including imaging a jurisdiction identifier thereof and voting selections marked thereon, wherein the jurisdiction identifier identifies the jurisdiction or jurisdictions to which each ballot pertains. The parties again disagree with the structure that performs this function.

The structure required in this claim is identical to that required in Ref. No. 58 above. The parties cite the same references to the specification, and the general language of the parties' proposed claim construction is similar to that they proposed in Ref. No. 58. No new argument is made by any party.

Therefore, for the reasons set forth in Ref. No. 58, the Court construes the term in Ref. No. 69 as follows:

***Function:* Reading each ballot including imaging a jurisdiction identifier thereof and voting selections marked thereon, wherein the jurisdiction identifier identifies the jurisdiction or jurisdictions to which each ballot pertains.**

***Structure:* An optical imager/reader that images a paper ballot, including the jurisdiction identifier and the voting selections, including the technology used in ( *i.e.*, or parts of) conventional ballot readers (such as the PAGES CAN II from Peripheral Dynamics, Inc. and the SCAN-MARK ES2800 reader from Scantron), and/or conventional office equipment such as copiers, scanners, facsimile (fax) machines, and other commercial imaging and/or scanning devices (such as DR5020 and DR5080 from Canon Electronics, Inc. and IS330DC from Ricoh Co.), and the like.**

***III. The '313 Patent.***

**A. Ref. No. 77 "Imaging" or "image" or "imaged."**

This term is recited in or referred to in Claims 13, 14, 16, 19, 33, and 47.

The parties agree that these terms have the same meaning as in the '4 Patent, Ref. No. 56 above. For the reasons set forth in Ref. No. 56, the Court construes the terms "imaging," "image," or "imaged" as:

**Electronically capturing and recording images and data from a ballot in a pixelated or bitmapped format.**

**B. Ref. No. 78 "Image document scanner" or "document image scanner."**

These phrases are recited in or referred to in Claims 13 and 18.

Defendants' major dispute with Plaintiff's claim construction is that conventional ballot readers are not capable of imaging a document or ballot. Plaintiff agrees with Defendants on this point, as does the patent specification. "It is noted that such conventional ballot readers employ sensors positioned on a fixed grid pattern ... and such readers do not image a ballot...." (Col.17, 11.62-67.) Consequently, Plaintiff has offered

to modify its construction by adding the following disclaimer: "Excluding non-imaging conventional ballot readers which employ sensors positioned on a fixed grid pattern."

The specification provides that ballot readers "may utilize all or part of conventional ballot readers and/or may utilize parts of conventional office equipment such as copiers, scanners, facsimile (fax) machines, and other commercial imaging and/or scanning devices and the like, e.g., for imaging and/or optically reading the information contained on an optically-readable paper ballot." (Col.17, 11.50-57.) Claim 18 of the '313 Patent provides that the document image scanner includes a copier, scanner, fax machine, commercial imaging device, and a commercial scanning device. This language is consistent with Plaintiffs use of the phrases "are part of" and "not limited to."

For the foregoing reasons, the Court construes the phrase as set out in Ref. No. 78 as follows:

**The document image scanner includes, but is not limited to, optical readers, commercial imaging scanners, and all or part of conventional ballot readers, (excluding non-imaging conventional ballot readers which employ sensors positioned on a fixed grid pattern) conventional office equipment such as copiers, scanners, facsimile (fax) machines, and other commercial imaging and/or scanning devices, and the like.**

### **C. Ref. No. 79 "Pixelated or bitmapped format."**

This phrase is recited in or referred to in Claims 13 and 47.

The parties disagree on whether an image of a ballot that is produced in a pixelated or bitmapped format must be "viewable electronic reproductions of an actual document" or whether it is "a collection of data elements representing the individual pixels of a ballot image." Plaintiff also criticizes Defendant's claim construction because it focuses on the darkness of pixels and not on their location or density.

While referring to conventional ballot readers, the specification teaches that they do not image a ballot and, therefore, "they cannot identify or determine pixel density and/or location as may be done for a true ballot image as described herein." (Col. 17, 1. 62 to Col. 18, 1. 2.) "The pixels of the ballot image are stored in a TIFF, BMP or other bitmapped or pixelated format, for each mark space are tested to determine whether it is a 'light' ( e.g., not marked) pixel or a 'dark' ( e.g., marked) pixel." (Col.21, 11.1-7.) "If a sufficient portion of the tested pixels in a given marked space are 'dark' pixels, then that mark space is considered to be marked, ..." (Col.21, 11.11-13.) The specification teaches that the ballot image is captured by a ballot reader, and the ballot must be read to determine which mark space has been marked significantly to count as a voting selection. (Col.22, 11.60-64.) "The ballot reader produces an image ... that is preferably in a pixelated or bitmapped format, e.g., a TIFF or a BMP image, or other bitmapped format." (Col. 22, 1. 65 to Col. 23, 1. 2.)

Figures 10A, 10B, and 10C illustrate the desired markings on pixels, and the specification teaches the process. "The maximum number of pixels that a mark could darken ... is determined by subtracting the number of pixels of the outline of mark space from the total number of pixels in reading region." (Col.23, 11.37-42.) There is a predetermined threshold of dark marked pixels that is established to determine whether a mark space has been "marked (voted)." (Col.23, 11.44-50.) The pixel intensity or brightness is tested, and each pixel is determined to be either "light" or "dark." (Col.25, 11.58-61.)

Nothing in the specification teaches that the pixelated or bitmapped format must be "a viewable electronic reproduction of an actual document." The ballot image is captured by a ballot reader to determine the mark spaces or pixels. The ballot reader produces an image in a pixelated or bitmapped format. The pixelated or bitmapped format is a collection of data that represents the location, density, and darkness of the number of individual pixels. There is a considerable amount of support in the specification that provides for the darkness of a pixel as the determining factor on whether a mark space has been marked to indicate a voting selection.

For the foregoing reasons, the Court construes the terms "pixelated or bitmapped format" as follows:

**A collection of data elements representing the individual pixels of the ballot image such that the darkness of each pixel may be determined. The images are typically stored in formats such as .BMP, or .TIFF, or other bitmapped format.**

**D. Ref. No. 81 "Ballot image," "image of the ballot," "image of each paper ballot," "image thereof."**

These terms or phrases are recited in or referred to in Claims 13, 14, 16, 19, 33, and 47.

The Court has construed the term "imaging," "image," and "imaged" in Ref. No. 56 of the '4 Patent as follows; "Electronically capturing and reproducing images and data from a ballot in a pixelated or bitmapped format." The parties agree that the instant terms in Ref. No. 81 must be construed consistently with the Court's previous construction of variations of the term "image." The dispute here is whether the *entire* ballot must be imaged or only *portions* of the ballot must be imaged.

The specification teaches that "[o]nly the images of the [voter identifier] and mark space zones need be obtained and stored for tabulating and/or verifying voting by vote counter. Images of the [voter identifier] and mark space zones may be stored in any suitable electronic format..." (Col.15, 11.21-25.) "The ballot reader produces a ballot image, whether of the entire ballot or only portions thereof selected in accordance with the applicable ballot template, that is preferably in a pixelated or bitmapped format, *e.g.*, a TIFF or a BMP image, or other bitmapped format." (Col. 22, 1. 65 to Col. 23, 1.2.)

The use of the term "a viewable" ballot has been discussed in Ref. No. 69 herein, and the Court found that there is no support for this term in the patent specification. Defendants' construction is supported by the specification language and intent.

Accordingly, the Court has construed the terms in Ref. No. 81 as follows:

**An electronic representation of all or a portion of a paper ballot, including a representation of the jurisdiction identifier and at least one voting selection, which representation is stored in a pixelated or bitmapped format.**

**E. Ref. No. 86 "Pixels."**

This term is recited in or referred to in Claims 47 and 48.

The sole dispute on the construction of this term is that Defendants include the word "distinct" in defining pixels and Plaintiff does not. Defendants cite no authority for the use of the term "distinct." The Court will rely on those specification references cited in the discussion on Ref. No. 79, *supra*. Column 7, lines 36-49

teaches that "each mark space is in a predetermined position relative to indicia or fiducial marks," and "[w]here ballots are imaged, the positions of each indicia or fiducial mark is defined in the same coordinate system as are the pixels of the ballot image...." Id. Further explanation of pixels is contained in Column 25, lines 29-57 and Figures 10A, 10B, and 10C. Figure 10C clearly shows the pixels in a distinct location on the ballot. Regardless, in Defendants' construction, the term "distinct" defines "data." There is no support for this construction in the specification.

For the foregoing reasons, the Court construes "pixels" as: **Ballot image data elements.**

Accordingly,

**IT IS HEREBY ORDERED** that the parties' request for joint claim construction is granted as set forth above.

E.D.Mo.,2007.

Avante Intern. Technology Corp. v. Diebold Election Systems

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