Director of the PTO.[2] Because of the nature and lengthy history of these actions, the Court refers to the defendant as "PTO" throughout this opinion.

Mr. Hyatt brought these actions pursuant to 35 U.S.C. § 145 to obtain patents on three of his patent applications following decisions in the Board of Patent Appeals and Interferences, now known as the Patent and Trial Appeal Board (the "Board").[3] Section 145 allows an applicant dissatisfied with the decision of the Board to "have remedy by civil action" in district court, rather than taking an appeal directly to the Federal Circuit.[4] *See also Kappos v. Hyatt*, 566 U.S. 431 (2012). In a series of opinions issued August 23, 2016, the Court found genuine disputes of material fact precluded summary judgment in these matters, which therefore required trials on the merits.[5]

After the Court resolved the summary judgment motions, however, the PTO moved to dismiss these actions for prosecution laches. Def.'s Mot Dismiss, ECF No. 91. In that set of motions, PTO argued that Hyatt's conduct in prosecuting these three patent applications, as well as approximately 400 others, called for dismissal. *Id.* at 8-9. Mr. Hyatt, on the other hand, argued that the PTO was responsible for extensive delay in adjudicating many of the applications, Pl. Mot. Dismiss, ECF No. 101 at 7-9, and made the case that he was entitled to discovery. *Id.* at 37-38. On March 16, 2017, the Court found that genuine disputes of material fact required treating the motions to dismiss as if they were for summary judgment, and denied them accordingly. ECF No. 116.

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[2] Andrei Iancu has been automatically substituted for Joseph Matal in these actions under Fed. R. Civ. P. 25(d).

[3] Case number 05-cv-2310 relates to the 08/457,211 application (the '211 application); No. 09-cv-1864 relates to the 08/456,398 application (the '398 application); and No. 09-cv-1872 relates to the 08/431,639 application (the '639 application). All docket citations herein are to 05-cv-2310 unless otherwise specified.

[4] At the time Mr. Hyatt filed the present cases, venue lay by statute with the District Court of the District of Columbia. In 2011, Congress amended the venue provision of certain patent-related statutes, including §145, such that suits under those sections are henceforth to be filed in the Eastern District of Virginia. Pub. L. 112-29, §9 (Sept. 16, 2011).

[5] *See* ECF No. 75 (05-cv-2310); ECF No. 71 (09-cv-1864); ECF No. 72 (09-cv-1872).

With leave of Court, the PTO subsequently amended its answers to assert prosecution laches as an affirmative defense. ECF No. 123. The Court set the PTO's affirmative defense of prosecution laches across all three actions for a bench trial,[6] which also would consider evidence relating to Mr. Hyatt's approximately 400 other pending applications. ECF No. 150. The PTO, bearing the burden of proof on the affirmative defense of prosecution laches and upon agreement of the parties, presented its case-in-chief first. During the five trial days beginning October 6, 2017, during which the PTO presented its case-in-chief, the PTO presented the testimony of three witnesses. The parties also introduced a number of exhibits.[7]

At the close of the PTO's case-in-chief on prosecution laches, Mr. Hyatt moved for judgment pursuant to Federal Rule of Civil Procedure 52(c). Upon consideration of the evidence and arguments presented during trial and the entire records in these cases up to that time, and review of the relevant case law, the Court found the PTO failed to prove unreasonable and unexplained delay that would support dismissal for prosecution laches, and accordingly granted Mr. Hyatt's motion.[8] The Court's ruling on prosecution laches necessitated trials on the merits in these three cases. Each of the three trials featured three witnesses: the plaintiff called Mr. Hyatt and his expert witness, Mr. Bradford Hite, while PTO called its expert, Dr. Kenneth Castleman.

Plaintiff's expert Mr. Hite has booth a Bachelor of Science and a Master of Science degree in Electrical Engineering from California State University at Northridge. For the past 23 years, he has worked as an electrical engineer for ITT Corporation (including as a technical lead on certain

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[6] The PTO's prosecution laches argument, and the accompanying trial, also applied to a fourth case, 09-1869, arising out of a §145 matter related to patent application 08/472,062, entitled "A System of Weighting and Scaling Image Information." The affirmative defense was the last unresolved issue in that case, so it did not proceed to a trial on the merits.

[7] Because the proceedings regarding prosecution laches are part of the record in each of these three cases, in addition to one other, *see* 09-cv-1869, the Court includes for background some citations to that October 2017 trial.

[8] In addition to the present Opinion and in accord with Federal Rule of Civil Procedure 52(a)(1), the Court today also issued a separate Memorandum Opinion, Findings of Fact, and Conclusions of Law further explaining its ruling on the PTO's affirmative defense.

projects), Magellan Systems, Raytheon, Curtis-Wright, Lear Astronics, MiniMed, RoundTrip Technologies, SiRF, Quallion LLC, Paylon Medical, ASML, and Neural Analytics. Trial Tr. 32:25–49:5 (Nov. 14, 2017 AM Session) (09-1872). Mr. Hite has worked on complex electrical engineering projects involving missile defense radars, flight control systems, the Global Positioning System ("GPS") for consumer and military applications, glucose meters and insulin pumps for diabetics and cancer pain-management, long-distance tracking, battery modules for military aircraft and space applications, avionics computers, and Doppler radar imaging for concussions in football.

Mr. Hite's experience with memory systems and image processing includes a project at ITT in 1984 working on graphical displays for equipment that interfaced with external control devices like keyboards for which he contributed computer code, and working on image processors and various types of memory architectures for a Navy missile defense project with ITT in 1987. During his tenure at Magellan, Mr. Hite worked on dot-matrix LCD displays that would scan out images, using a block of Random Access Memory ("RAM") to do so. At MiniMed, Mr. Hite's work included a graphical interface with RAM memory organization, and Mr. Hite wrote software to test and operate the display. *Id.* Mr. Hite was qualified without objection as an expert in application-specific processors, including memory and image processing. Trial Tr. 49:2–6 (Nov. 14, 2017 AM Session) (09-1872).

Defense expert Dr. Castleman received his Bachelor of Science, Master of Science, and Doctor of Philosophy (Ph.D.) degrees in Electrical Engineering from the University of Texas at Austin. *See* Trial Tr. 477:9-11 (Feb. 14, 2018); *see also* DX3034 (0003). Dr. Castleman has more than fifteen years of experience in image processing for public sector endeavors, including in the image processing lab at NASA's Jet Propulsion Laboratory as a member of the Scientific

Working Group on Imaging Technology for the FBI, where he assisted NASA in the image analysis of the Challenger and Columbia space shuttle accidents. *See* DX3034 (0001); *see also* 1872 Trial Tr. 19:14-22:19 (Nov. 15, 2017 PM Session). He also has about twenty years of private sector experience designing and building image processing systems as president (or CEO) of a company he co-founded. *See* Trial Tr. 477:11-14 (Feb. 14, 2018); *see also* Trial Tr. 1872 Trial Tr. 19:14-21:4 (Nov. 15, 2017 PM Session); 1872 Trial Tr. 22:20-24:15 (Nov. 15, 2017 PM Session); DX3034 (001-002).

Dr. Castleman has written college-level textbooks on image processing, including *Digital Image Processing* (1979 and 1996 editions), published more than 60 scientific articles in technical journals, and has taught college courses related to image processing. *See* 1872 Trial Tr. 24:16-26:22 (Nov. 15, 2017 PM Session); Trial Tr. 477:23-478:2 (Feb. 14, 2018). He has previously served as an expert in approximately 33 cases. *See* DX3024.

Each trial lasted five days. The Court addresses each case in chronological order by docket number, rather than the order in which they were tried.

Case 05-2310 (the '211 application)

Civil case 05-2310, filed November 18, 2005, concerns patent application 08/457,211 (the '211 application), entitled "Improved Image Processing Architecture," which Mr. Hyatt filed with the PTO on June 1, 1995. One of several applications flowing from Mr. Hyatt's 641-page[9] "700-family" specification, the '211 application is a continuation of patent application serial number 07/289,355, filed December 22, 1988, which is a continuation of patent application serial number 06/663,094, filed October 19, 1984. The PTO entered a non-final Office Action rejecting the

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[9] The specification contains 576 pages of text and 65 pages of figures. PTX-001.05255–5830; PTX-001.05840–905.

claims on September 22, 1995, and entered a final rejection made on July 31, 1996. Mr. Hyatt, using the transitional rules provided in 37 C.F.R. § 1.129(a) ("Rule 129(a)"), petitioned to file an amendment, the effective equivalent of a continuing application, on March 25, 1997. PTX-004.06587–89. The PTO issued a non-final Office Action rejecting the claims on August 3, 1998. PTX-004.6053-54. The PTO entered a final rejection of all claims on August 27, 1999. PTX-004.06373.

Mr. Hyatt timely noticed his appeal to the Board on February 28, 2000, and he filed his appeal brief on August 28, 2000. PTX-004.04965. In the course of its decisions on Mr. Hyatt's appeal and subsequent motion for reconsideration, the Board reversed several rejections by the examiner of the '211 application claims and upheld others. *See* PTX-004.00103-04. Two hundred twenty-one claims in the '211 application remain before the Court, all of which were rejected by PTO for lack of written description. ECF No. 227 at 1. During a five-day trial that began on December 4, 2017,[10] Mr. Hyatt presented new evidence concerning sixty-six of those claims. *See* PTX-912.[11]

Case 09-1864 (the '398 application)

Civil case 09-1864, filed September 25, 2009, concerns patent application 08/456,398 (the '398 application), also entitled "Improved Image Processing Architecture" and sharing the 700-family specification, was similarly filed with the PTO on June 1, 1995. Like the '211 application, the '398 application is a continuation of patent application serial number 07/289,355, filed

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[10] The trial in this case was originally scheduled to run December 4-8, 2017, but was suspended on December 6, 2017 due to a medical emergency. The Court had previously been assigned to sit by designation in the Western District of Texas beginning January 2, 2018. With the parties' consent and to conserve judicial and the parties' resources, and consistent with 28 U.S.C. §141(b)(1), the Chief Judge of the District Court for the District of Columbia authorized this trial to resume as a special session in San Antonio, Texas. ECF No. 223. The special session in this case took place on January 18-19, 2018.

[11] Claim 467 is erroneously listed twice on page 164 of this exhibit.

December 22, 1988, which is a continuation of patent application serial number 06/663,094, filed October 19, 1984. PTX-001.05919-23. The PTO entered a non-final Office Action rejecting the claims on September 19, 1995, and a final rejection on August 9, 1996. PTX-001.05137. Mr. Hyatt petitioned to enter a submission pursuant to 37 C.F.R. § 1.129(a) with an amendment, effectively equivalent to a continuation application; the PTO subsequently rejected the then-pending claims in a non-final Office Action on December 12, 2000. PTX-001.04505–06. Mr. Hyatt amended the claims on January 30, 2002. PTX-001.04268–69. The PTO issued a non-final Office Action rejecting all claims on September 7, 2004. PTX-001.04025-26.

Mr. Hyatt timely noticed his appeal to the Board on March 7, 2005. PTX-001.03898. He filed his appeal brief on August 26, 2005, thereby closing prosecution. PTX-001.00928. In the course of its decisions on Mr. Hyatt's appeal and subsequent two motions for reconsideration, the Board reversed numerous grounds of rejection found by the examiner of the '398 claims and upheld others, concluding the PTO's administrative adjudication of the '398 application on July 8, 2009. A total of twenty-eight claims in the '398 application remain subject to Mr. Hyatt's §145 action before this Court: twenty-two rejected for lack of written description, and six because of anticipation.[12] A five-day trial began February 12, 2018,[13] during which new evidence was presented on each of the twenty-eight claims. *See* PTX-917.

Case 09-1872 (the '639 application)

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[12] Mr. Hyatt has also asked the Court to order patents to issue on '398 application claims for which examiners' rejections were reversed by the Board, but are not part of the present litigation. *See* 09-1864 ECF No. 220 at 1. The Constitution's case or controversy requirement bars the Court from issuing an Order on claims not in dispute before it. U.S. CONST. ART. III, §2(1).

[13] The trial in 09-1864 was originally scheduled to begin on December 11, 2017. Due to the same circumstances that gave rise to suspending proceedings in 05-2310 and resuming them in the Western District of Texas, the trial was rescheduled to February 12, 2018 in San Antonio, in accord with the Order Authorizing Special Sessions under 28 U.S.C. §141(b)(1). *See* 09-1864 ECF No. 215.

Civil case 09-1872, also filed September 25, 2009, concerns patent application 08/431,639 (the '639 application), entitled "Adaptive Memory System," which Mr. Hyatt filed on May 1, 1995. One of several applications flowing from Mr. Hyatt's 564-page[14] "600-family" specification, the '639 application is a continuation application of patent application serial number 07/279,592, filed December 2, 1988. PTX-003.01380. The PTO entered a restriction requirement requiring Mr. Hyatt to elect one group of claims for examination drawn to one invention on October 19, 1995. PTX-003.01311–13. On July 24, 1996, the PTO rejected the claims in a non-final Office Action. PTX-085.00005. The PTO rejected the claims in a final Office Action dated May 19, 1999. PTX-085.00005. Mr. Hyatt timely noticed his appeal on October 19, 1999. PTX-085.00005.

Mr. Hyatt filed his Appeal Brief on April 18, 2000, thereby closing prosecution. PTX-085.00005. In the course of its decisions on Mr. Hyatt's appeal and three subsequent motions for reconsideration, the Board reversed numerous rejections by the examiner of the '639 claims and upheld others, concluding the PTO's administrative adjudication of the '639 application on July 8, 2009. PTX-085.00005. Mr. Hyatt filed suit under 35 U.S.C. § 145 to obtain a patent on claims on which the Board affirmed at least one ground of rejection on September 25, 2009. A total of fifty-eight claims in the '639 application remain subject to Mr. Hyatt's §145 action before this Court: fifty-two rejected for lack of written description, and six because of obviousness. *See* 09-1872 ECF No. 197 at 3;[15] 09-1872 ECF No. 220 at 1. A five-day trial began November 13, 2017,

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[14] The specification contains 518 pages of text and 46 pages of figures. PTX-003.01333–1896.

[15] Document 197, Mr. Hyatt's pre-trial statement, lists sixty claims, but his challenges to two of those, claims 95 and 215, were withdrawn at trial. *See* 09-1872 ECF No. 219 at 5. Mr. Hyatt's proposed findings and conclusions list seventy-two claims on which he wants the Court to order PTO to issue a patent. *See* 09-1872 ECF No. 219 at 1. This appears to include the non-disputed independent claims upon which several disputed claims are dependent, *e.g.*, independent claim 103, upon which claims 220-24 depend. The Constitution's case or controversy requirement bars the Court from issuing an Order on claims not in dispute before it. U.S. CONST. ART. III, §2(1).

during which new evidence was presented on each of the disputed claims. *See, e.g.*, PTX-901; PTX904.

II. Legal Standard

a. §145 and *Kappos v. Hyatt*

Section 145 provides that a patent applicant dissatisfied with the Board's decision may sue the PTO in district court to determine the patentability of his alleged invention.[16] "The court may adjudge that such applicant is entitled to receive a patent for his invention, as specified in any of his claims involved in the decision of the [Board],[17] as the facts in the case may appear and such adjudication shall authorize the Director to issue such patent on compliance with the requirements of law." 35 U.S.C. §145.

In 2012, in a case arising out of one of Mr. Hyatt's related applications with origins and ancestry largely in common with the applications at issue here, and also first litigated in this court,[18] the Supreme Court determined that district courts can consider new evidence that was not before the PTO during prosecution of a §145 plaintiff's antecedent patent application, and "the district court must make a *de novo* finding when new evidence is presented on a disputed question of fact." *Kappos v. Hyatt*, 566 U.S. 431, 434 (2012).[19] District courts may nevertheless

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[16] As noted at n. 4, *supra*, venue for §145 actions now lies in the Eastern District of Virginia. Pub. L. 112-29, §9 (Sept. 16, 2011).

[17] The Supreme Court recently decided with respect to a different patent statute that "any" means "every." *See SAS Institute Inc. v. Iancu*, 138 S.Ct. 1348 (2018). To the extent that reading might be applied in a §145 context such that the PTO might, as cross-plaintiffs, ask the court in these proceedings to reverse Board determinations in an applicant's favor, *cf. Troy v. Samson Mfctrn'g Corp.*, 758 F.3d 1322 (Fed. Cir. 2014) (holding that new issues and arguments may be presented to district courts in §145 and §146 actions), that question has not been presented in this case, and the Court will not go beyond the claims Mr. Hyatt has brought before the Court.

[18] *See* 09-cv-901, concerning patent application number 08/471,702.

[19] The Supreme Court held that, in §145 actions, applicants are "free to introduce new evidence . . . subject only to the rules applicable in all civil actions, the Federal Rules of Evidence and the Federal Rules of Civil Procedure." *Kappos*, 566 U.S. at 444. In so doing, the Court upheld the Federal Circuit's rejection of PTO's argument that "new evidence" be limited to "that [which] could not reasonably have been provided to the agency in the first instance." *Hyatt v. Kappos*, 625 F.3d 1320, 1323 (Fed. Cir. 2010). In other words, the definition of "new evidence" in the rules applicable to post-trial or post-judgment proceedings such as motions for reconsideration do not apply

exercise their discretion to "consider the proceedings before and findings of the Patent Office in deciding what weight to afford an applicant's newly-admitted evidence." *Id.* at 445 (quoting *Hyatt v. Kappos*, 625 F.3d 1320, 1335 (Fed. Cir. 2010).

Section 145 cases remain "hybrid" actions after *Kappos*, *see also SD3, LLC v. Dudas*, 952 F.Supp.2d 97 (D.D.C. 2013), and APA deference is owed to Board decisions on claims for which no new evidence is presented. *See Alberts v. Kappos*, 917 F. Supp. 2d 94, 104 (D.D.C. 2013) ("If the parties do not submit new evidence during a § 145 proceeding, 'the reviewing court must apply the APA's substantial evidence standard to Patent Office fact findings.') (quoting *Hyatt v. Kappos,* 625 F.3d at 1336), *aff'd sub nom. Alberts v. Lee*, 552 F. App'x 986 (Fed. Cir. 2014).

Like the plaintiffs, the PTO is free to introduce new evidence and arguments for rejecting a §145 plaintiff's claims on the merits in response to new evidence presented as to those claims. *See also Troy v. Samson Mfctrn'g Corp.*, 758 F.3d 1322 (Fed. Cir. 2014). All evidence concerning the claims at issue must be presented to the Court for full consideration, because Section 145 "does not provide for remand to the PTO to consider new evidence." *Kappos*, 556 U.S. at 439.

b. Written description requirement

The vast majority of the claims now before the Court are the subject of earlier rejections within the PTO for lack of written description under 35 USC §112. That statute provides, in relevant part:

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

The Federal Circuit has explained "[t]he purpose of the 'written description' requirement is broader than to merely explain how to 'make and use'; the applicant must also convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention." *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991). The rationale for the written description requirement is clear:

> '[A] patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion.' Requiring a written description of the invention limits patent protection to those who actually perform the difficult work of 'invention'—that is, conceive of the complete and final invention with all its claimed limitations—and disclose the fruits of that effort to the public. . . . It is part of the *quid pro quo* of the patent grant and ensures that the public receives a meaningful disclosure in exchange for being excluded from practicing an invention for a period of time.

Ariad Pharm., Inc. v. Eli Lilly & Co., 598 F.3d 1336, 1353 (Fed. Cir. 2010) (internal citations omitted). Put another way, "[t]he essence of the written description requirement is that a patent applicant, as part of the bargain with the public, must describe his or her invention so that the public will know what it is and that he or she has truly made the claimed invention." *AbbVie Deutschland GmbH & Co., KG v. Janssen Biotech, Inc.*, 759 F.3d 1285, 1298 (Fed. Cir. 2014). Whether there is sufficient written description is ultimately one of fact. *See GlaxoSmithKline LLC v. Banner Pharmacaps, Inc.*, 744 F.3d 725, 729 (Fed. Cir. 2014).

Whether there is written description support for a claim is examined from the point of view of one skilled in the art at the time of the claimed invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) ("[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application."). Section 112's twin requirements, of (1) describing the manner and process of making and using the full scope of the invention, and (2) describing the invention sufficiently to convey the patentee had possession of the claimed invention, are viewed in this same light and "usually rise and fall together." *LizardTech, Inc. v. Earth Res. Mapping, Inc.*, 424 F.3d 1336, 1344-45 (Fed. Cir. 2005).

In determining whether there is sufficient written description, courts do not use bright-line rules, *Ariad*, 598 F.3d at 1351, but, in general "the test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Id.* Although this does not require an applicant to detail each and every instantiation of a claimed invention, *see id.* at 1352, PTO guidelines, adopted by the Federal Circuit, require "disclosure of sufficiently detailed, relevant identifying characteristics . . . *i.e.*, complete or partial structure, other physical and/or chemical properties, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics." *Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 964 (Fed. Cir. 2002). In other words, "the applicant must 'convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention,' and demonstrate that by disclosure in the specification of the patent." *Carnegie Mellon Univ. v. Hoffmann–La Roche Inc.*, 541 F.3d 1115, 1122 (Fed. Cir. 2008) (*quoting Vas–Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563–64 (Fed. Cir. 1991)). Further, claims added during prosecution must themselves find support sufficient to satisfy § 112 in the written description of the original priority application. *See, e.g.*, *Anascape, Ltd. v. Nintendo of Am., Inc.*, 601 F.3d 1333, 1335 (Fed. Cir. 2010). And if the applicant is purporting to provide written description for a genus, "One needs to show that one has truly invented the genus, *i.e.*, that one has conceived and described sufficient representative species encompassing the breadth of the genus. Otherwise, one has only a research plan, leaving it to others to explore the unknown contours of the claimed genus." *AbbVie Deutschland GmbH & Co., KG v. Janssen Biotech, Inc.*, 759 F.3d at 1300.

Although the doctrines of written description and enablement are distinct, determining if there is sufficient written description support for a broadly claimed invention can be "analogous to enablement of a genus under § 112, ¶ 1, by showing the enablement of a representative number of species within the genus." *Regents of the Univ. of California v. Eli Lilly & Co.*, 119 F.3d 1559, 1569 (Fed. Cir. 1997); *see also Kennecott Corp. v. Kyocera Intern., Inc.*, 835 F.2d 1419, 1421 (Fed. Cir. 1987) ("These requirements may be viewed separately, but they are intertwined."). A claim does not satisfy the written description requirement when it recites "a technically difficult solution that the . . . specification does not solve, let alone contemplate or suggest as a goal or desired result." Cisco Systems, Inc. v. Cirrex Systems, LLC, 856 F.3d 997, 1010 (Fed. Cir. 2017).

c. Anticipation rejections

In case 09-1864, the Court is considering six claims in the '398 application subject to anticipation rejections. A patent application will be rejected for anticipation under 35 U.S.C. § 102 if "the invention was patented or described in a printed publication . . . more than one year prior to the date of the application...." 35 U.S.C. § 102(b) (2006).[20] If every claim limitation recited was disclosed in a single prior art reference (*i.e.*, publications showing that the technology was known before the instant application) more than a year before the applicant filed the application, the application will be rejected. *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997); *In re Spada,* 911 F.2d 705, 708 (Fed.Cir. 1990).

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[20] Section 102 was amended by the Leahy–Smith America Invents Act, Pub.L. 112–29, Sec. 3, 125 Stat. 284 (Sept. 16, 2011). But, the old version still applies to this case, since the patent application was filed well before the amendment's effective date. See id. Sec. 35

d. Obviousness rejections

In case 09-1872, the Court is considering six claims in the '639 application for which Mr. Hyatt challenges their obviousness rejections. For two of the claims, Claims 89 and 104, he challenges the rejection on two independent grounds. A patent application will be rejected for obviousness where "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a) (2006). Obviousness is a legal conclusion underpinned by "factual questions relating to the scope and content of the prior art, the differences between the prior art and the claimed invention, the level of ordinary skill in the art, and any relevant secondary considerations such as commercial success, long-felt need, and the failure of others."[21] *PharmaStem Theapeutics, Inc. v. ViaCell, Inc.,* 419 F.3d 1342, 1359 (Fed. Cir. 2005).

To render a claimed invention obvious, the prior art must allow or enable one skilled in the art to create the claimed invention. *See In re Kumar,* 418 F.3d 1361, 1368 (Fed. Cir. 2005) (citing *Motorola, Inc. v. Interdigital Tech. Corp.,* 121 F.3d 1461, 1471 (Fed. Cir. 1997)); *cf. KSR Int'l v. Teleflex Inc.,* 550 U.S. 398 (2007) ("If [an obvious combination of elements] leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense."). The prior art itself need not be enabled, since even "a non-enabling reference may qualify as prior art for the purpose of determining obviousness, and even an inoperative device is prior art for all that it teaches." *ABT Sys. LLC v. Emerson Elec. Co.,* 797 F.3d 1350, 1360 n. 2

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[21] Referred to as the *Graham* factors, these considerations are derived from the Supreme Court's decision in *Graham v. John Deere Co.*, 383 U.S. 1, 17–18, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966). It is the rule in the Federal Circuit that district courts evaluating a claim of obviousness engage in the inquiry outlined in *Graham*. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 662–63 (Fed.Cir.2000).

(Fed. Cir. 2015) (internal punctuation omitted) (internal quotation marks omitted) (quoting *Symbol Tech., Inc. v. Opticon, Inc.,* 935 F.2d 1569, 1578 (Fed. Cir. 1991) and *Beckman Instruments, Inc. v. LKB Produkter AB,* 892 F.2d 1547, 1551 (Fed. Cir. 1989)).

III. Analysis

Before reaching the claims themselves, the Court must determine the characteristics of one of ordinary skill in the relevant arts, whose point(s) of view the Court must adopt in reviewing the claims in each of these applications. Two of the applications, the '211 application and the '398 application, have the same lineage and a common ancestor application making their claim priority date October 1984. The '639 application has a slightly newer origin, with a claim priority date of December 1988.

The Court finds that an ordinary artisan in 1984 attempting to practice the technology the 700-family specification purports to teach in the '211 and '398 applications, would have a master's degree in electrical engineering or closely related field, and three to five years' experience in digital circuit design. The ordinary artisan in 1984 attempting to practice the technology taught in the 600-family specification as applied in the '639 application would have a master's degree in electrical engineering or a related field, and would have three to five years of experience in designing logic and circuits.

a. Claims Rejected by PTO for Lack of Written Description

To satisfy the written description requirement under §112, one must: (1) "describe the manner and process of making and using the invention so as to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation" and, (2) "describe the invention sufficiently to convey to a person of skill in the art that the patentee had possession of the claimed invention at the time of the application, *i.e.*, that the patentee invented what is claimed." *LizardTech*, 424 F.3d at 1344-45. This determination is one of fact. *GlaxoSmithKline*, 744 F.3d at 729. With certain exceptions, Mr. Hite's expert testimony illuminated the necessary facts supporting a finding of written description on most of the still-disputed claims for which Mr. Hyatt presented new evidence.

In determining *de novo* the patentability of claims for which new evidence has been presented, determinations of the Board are not accorded deference, nor are grounds of rejection identified in relevant Office Actions evidence of the matters asserted therein, though the Court has discretion to consider the earlier proceedings and findings when weighing the new evidence. *See Kappos*, 566 U.S. at 445. Thus, the key inquiry for the Court with respect to written description support is whether it exists and whether it could have been discerned by a reasonable artisan, not whether the examiner or Board discovers it. Here, those rejections serve as the backbone of PTO's defense in these cases, since PTO has not asserted any additional grounds of rejection since litigation commenced, as *Troy* suggests they could have. *See* 758 F.3d 1322.

In each of the three cases at bar, PTO cites to *Purdue Pharma L.P.*'s metaphor that "one cannot disclose a forest in the original application, and then later pick a tree out of the forest and say [']here is my invention.[']" ECF No. 228 at 68; 09-1864 ECF No. 227 at 96; 09-1872 ECF No. 220 at 69, *quoting* 230 F.3d at 1326-27 (*citing In re Ruschig*, 379 F.2d 990 at 994-95 (CCPA 1967). This Court, however, is mindful of the context of *Purdue Pharma* and its limited applicability with respect to most of the challenges at issue in these cases. In *Perdue Pharma*, certain vague adjectives (*i.e.*, "flat" and "substantially flat") in the specification were found not to define the specific measurement parameters and concepts Purdue later claimed. The examples provided in Purdue's application likewise failed to make clear that the later-claimed property of the invention (a concentration ratio for a delayed-release opioid) was "an important defining quality" of the originally filed disclosure. 230 F.3d at 1327.

Although *Purdue Pharma* is instructive here in the respects for which it is cited *infra*, PTO's thematic reliance on the forest and trees metaphor is, for the most part, misplaced in the present matters. In these cases, PTO largely supports the written description rejections by appealing (though never explicitly) to a needle-in-a-haystack metaphor. And while it is understandable as a practical matter that it is difficult for even the best patent examiners to track several hundred pages of specification, especially as they attempt to apply to it the guidance contained in a 3,000 page manual, that fact holds little weight in a §145 case. The tenet central to the Supreme Court's holding in *Kappos* is that additional evidence may exist that assists a district court in finding, *e.g.*, written description support that, for whatever reason, had not earlier been found or deemed adequate.[22]

Also common across all three applications is a series of plaintiff's exhibits prepared specifically for trial depicting graphically Mr. Hyatt's "top-down" design of his inventions. *See, e.g.*, PTX-910 at 32 (graphical representation of the "top-down" design); PTX-912.005-10 ("Figure 1A" and associated figures). The PTO argues the Court should give these figures little to no weight, as neither they, nor their expert Dr. Castleman, saw them prior to Mr. Hyatt's testimony on the first day of the first merits trial. But evidence such as this, and plaintiff's expert Mr. Hite's testimony, is exactly the type of new evidence that is helpful to the Court in a §145 case.

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[22] To the extent the Court is fairly characterizing the PTO's metaphorical approach, it is noteworthy that it is not here looking for a needle in a haystack, but rather some of the hay which, far from being out of place, has always been there and, according to the inventor, is integral to the haystack itself. The Court's finding written description support for certain claims in this instance is thus not a moral judgment of any sort as to examiners' or the Board's diligence – indeed, it took many hours of expert testimony over many weeks of trial for the Court to be able to make these findings. Rather, the Court's findings rely heavily upon the new evidence presented at trial, in the form of expert testimony, establishing that certain of Mr. Hyatt's claims have adequate written description support.

As such, the Court recognizes that it has had the benefit of Mr. Hyatt's and Mr. Hite's diagrams, figures, and in-court presentation, as it is required to consider under *Kappos*, establishing that the descriptive features in question were included in Mr. Hyatt's respective applications (even without the video contemporaneously documenting and describing features of his experimental system). What is left for the Court is merely to find whether ordinary artisans in the 1980s could similarly have discerned the substance of the inventions as Mr. Hyatt has described and Mr. Hite has laid bare. With some particularized exceptions, the Court finds that the ordinary artisan could.

Mr. Hite's claim mapping technique very clearly points out where the specification recites the features appearing in the still-challenged claims. The PTO correctly observes that neither the examiners of these applications nor the Board had the benefit of a presentation like Mr. Hite's, but that is irrelevant to the merits of the *de novo* §145 actions. Still, while Mr. Hite's claim mapping paints a clear picture of Mr. Hyatt's best case for written description support of his still-challenged claims, it does not carry the day for all the claims before the Court, where ambiguities or an unreasonably large number of potential permutations of chip sets, for example, do not satisfy the Court that the specification provides adequate written description support for those claims.

PTO also objects to the Court's consideration of Mr. Hyatt's video submitted as part of PTO's former Documents Disclosure Program, arguing it to be irrelevant to these cases. *See, e.g.*, 09-1864 ECF No. 227 at 105. PTO argues that 37 C.F.R. §1.57 does not allow Disclosure Documents to be incorporated by reference into patent applications, *see, e.g.,* 09-1872, dkt 220 at 26 n.12 ("The only incorporated material that may be relied upon for purposes of demonstrating written description are 'a U.S. patent or U.S. patent application publication.' . . . [A] Disclosure

Document is not a U.S. patent application.") (*quoting* §1.57(d)), and, even if it did, the program only permitted documents and photographs to be submitted, and Mr. Hyatt's videotape evidence is neither.

PTO's reading of §1.57(d) in isolation is unpersuasive here, for three reasons. First, subsection (d)'s definition of "essential material" is too narrow in the present context, where there is new evidence (*i.e.*, Mr. Hite's testimony and expert report) for the Court to consider. Second, under subsection (f), an examiner can require copies of any material, essential or not, that has been incorporated by reference – the video prospectively satisfied any obligation Mr. Hyatt would have had in that regard. Third, subsection (g) provides for material incorporated by reference to be attached as a later amendment, which the Court potentially could order be done here.

The Court understands, however, the sound reasons for PTO's resistance to Mr. Hyatt's video demonstration of his experimental system in the examination (vs. litigation) context. If, for example, there was no way to make the video publicly available contemporaneous with any issued patent, then, by definition, the video could not teach the invention. This is especially true concerning applications filed before file wrappers were digitized and the PTO's patent database was available online. Even today, where PTO's patent databases are fully searchable online,[23] this Court is not in any position to order PTO to create a "PatentTube" site to host video content in connection with patent applications, although the PTO would certainly be free to do so if it so chose. And, in these matters, merely transcribing the video and ordering the transcript attached to the patents to be issued would not be very helpful to the public.

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[23] *See* https://www.uspto.gov/patents-application-process/search-patents.

The above merely demonstrates one way in which there is a disconnect between the material Mr. Hyatt presented to examiners that may not have conformed to certain PTO regulations at the time, and what this Court may consider *de novo* in determining patentability under §145. Even assuming PTO properly disregarded the video during examination, that merely renders the video "new evidence" for the purposes of these actions, and there is no doubt the video disclosure, at a minimum, tends to prove Hyatt's possession of certain features of the inventions claimed in the present applications at the time the video was recorded. Because the video is not part of the specification and cannot be readily included in useful form in an issued patent, however, it can be given little weight to the inquiry of whether it can be said to have taught the purported invention(s) to the ordinary artisan at the time the respective applications were filed.[24]

i. Written Description Rejections in 05-2310 (the '211 application)

The '211 specification purportedly recites an improved image processing system and certain uses for it. In particular, the specification discusses image processing "capable of geometrically manipulating a highly detailed image in true real time; such as for simultaneous rotation, translation, expansion, compression 3D perspective, and warping at a 30-times per second update rate." A93. The manipulated image can be imported "from a video camera or from a database memory." *Id.* In the '211 specification, the terms rotation, translation,

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[24] To be sure, the video evidence at-issue that shows implementation of certain features claimed in Mr. Hyatt's applications unambiguously shows possession of those inventive features as of the date of the video. Strangely, although PTO argues that the Court should not consider the video as evidence establishing that Mr. Hyatt possessed the relevant features of his experimental system as being outside of the specifications, PTO also seems to want to it against Mr. Hyatt where a feature (*e.g.*, 3D perspective or multiple channels) is absent from the experimental system, even though PTO has not squarely put enablement before the Court. In any event, although it does not offer much help with respect to written description, the video nevertheless could, however, reasonably assist in traversing the anticipation and obviousness rejections at-issue in two of these cases, in that it better shows what the system actually did, versus what is taught in the other patents.

expansion, compression, 3D processing, and warping are each described in the context of a flight simulator application in which an operator uses joysticks to control a virtual airplane. A116-117 (discussing "flight simulator application"); A131; A134; A220 (discussing movement using a joystick). The user is looking out a window of the airplane cockpit and sees the ground below. *See, e.g.*, A523 ("The moving map display can be implemented . . . as if the display is a special optical window in the floor of the cockpit."). For example, as the user operates the joystick to move the simulated airplane higher, the user sees objects shrink to look farther away; as the simulated airplane turns, objects rotate. A116-117; A131 (describing rotation); A134 (describing shrinking).

The system described in the '211 specification is built upon different technology than what today is known as graphical user interface (GUI) technology. Mr. Hyatt's technology relies on having two monitors. A18 (showing separate "interface" and "mainframe"). One is a terminal that has input devices such as a keyboard or joystick, in which the user inputs commands, sets up initial conditions, and selects an image to be displayed. A93-94 ("user interface comprising a computer terminal with keyboard, joysticks, or trackball"). For example, the terminal may show a menu for setting initial conditions of the system. A625. The other monitor is a display screen that shows the image. A108 ("The processed image is scanned out to [the] display monitor."). Mr. Hyatt built an "experimental system" that "embod[ies] the invention claimed in the '211 Application." A108; ECF No. 57-4 at 2. The experimental system includes these two separate devices: an "interface" or "terminal" for inputting commands and a separate display monitor for output, shown below right. The terminal shows only text, while the display monitor shows an image but does not accept any direct user input. Mr. Hyatt's current claims all include the term "window," in which these "windows" overlay each other and include interactive features such as menus and icons.

PTO argues all of the still disputed claims must fail because they recite "windows," and, for some, "menus" and/or "icons." PTO says the term "window" is used in different ways and not specifically defined in the specification, and, especially when read in conjunction with the application's use of "menus, cursors, icons, or other computer operator aids," can be read broadly enough to encompass modern graphical user interfaces with user-interactive windows. The Court disagrees that the specification and claims can be so broadly read. The evidence at trial indeed revealed multiple possible meanings of the word "window" across the '211 application's 641-page specification, but each would have been distinctly understood from context and usage by an ordinary artisan in 1984. Even a layman of moderate sophistication can recognize the difference between a "window" that is a portion of image memory, for example, versus that which we call a "window" that is a defined portion of what is displayed on a computer screen. The two uses are not interchangeable in context. Nor is PTO's argument furthered by the notion that menus and icons fall into the general category of "operator aids," as the evidence makes clear the limits of the technology Mr. Hyatt developed in the early 1980s. Mr. Hyatt's system depended on a separate terminal to receive input and generate the desired outcome on the display screen; it was not a self-contained personal computing system (though, as discussed below, the '639 application purports to invent an image memory architecture useful in such a system). Although phenotypically similar, there is a very basic and readily discernable difference between icons or menu commands that are, in effect, self-executable (*i.e.*, icons that represent operations, *e.g.*, .exe files, or menu items that similarly require a mere click of a mouse to execute a command), versus those that are merely graphical or textual representations of images, portions of images, representations or other thumbnails of images, or even certain options from which a human operator may choose within a program but which require a different terminal to execute. Even the PTO's expert, Dr. Castleman, noted that not all menu-driven interfaces are graphical; graphical interfaces use graphics to facilitate the interaction with the user. *See* Trial Tr. 159:1-5 (Jan. 18, 2018).

Even so, in and of itself, the method by which an operator initiates a command to execute a program or procedure (*e.g.*, typing, point-and-click, etc.), though a necessary precursor to the image processing done within the computer, is not itself fairly characterized as "image processing" in a computing sense. Said differently, a photographer who uses a software program to interface with a computer to achieve "post-production processing" of a photograph is only himself "processing" the image to the extent that he is giving the computer a set of instructions through which he hopes or expects the computer to render the desired results through its own processing system. PTO itself effectively made this argument in case 09-1864 regarding Mr. Hyatt's "searching for a feature" claims in his '398 application, arguing there is a difference between a human operator searching for a feature on a screen, versus a computer itself performing a search given certain inputs. *See* 09-1864 Trial Tr. 31:25-32:7 (Feb. 12, 2018). Further, the PTO put on no evidence that the specification contains written description support for a GUI of the sort it argues the claims could be construed to include.

The looming issue in this case is a question of enablement concerning non-destructive image overlaying and the requisite multiplexer/demultiplexer (mux/demux) to achieve that functionality. Mr. Hyatt's experimental system operated at an image refresh rate of 9MHz on a single-channel system; Dr. Castleman testified that building a high-speed multiplexer device needed for true video – 30 frames per second, would require far more inventing than Mr. Hyatt's application achieves, especially in applications in which each image displayed requires a separate channel. The mux/demux device used a commonly available 74 LS365 chip, the claims themselves appear to envision no more than five channels, *see, e.g.*, Trial Tr. 321:6-11 (Jan. 19, 2018) (concerning Claim 394), and anything above five channels would not have been capable of the processing necessary to handle the associated data rates. The Court therefore finds that the '211 application has adequate written description support for up to five channels covering the helicopter training simulator application, landscape architecture application, moving map display application, and remotely piloted vehicle application claims for which evidence was produced at trial.

In light of the above, two hundred, twenty claims remain disputed in the '211 application being litigated in case 05-2310; at trial new evidence and argument was heard on sixty-seven of those claims, leaving one hundred, fifty three claims unaddressed in the relevant proceedings in this matter.

Section 145 cases are usually referred to as "hybrid" actions because those claims for which new evidence is presented are decided *de novo*, while claims for which no new evidence is presented are reviewed with discretion afforded to the agency's decision on a substantial evidence standard. *Hyatt v. Kappos*, 625 F.3d at 1336. This Court denied summary judgment in this case because the Court determined there to be outstanding genuine issues of material fact. *See* ECF No. 75. In the case of the written description rejections, whether there is adequate written description is itself the material fact. *See GlaxoSmithKline*, 744 F.3d at 729 (written description is a fact question). The Court has reviewed the Board's rejections of those claims for which no new evidence was presented at trial, and finds no basis in the administrative record to come to conclusions contrary to those of the Board. Hyatt's decision not to put on new evidence

b. Claims 206, 209, 220, 221, 222, 223, 224, 227, 228, 229, 230, 231, 232, 235, 236, 237, 238, 239, 242, 243, 244, 245, 246, 249, 253, 300, 301, 344, 364, 368, 372, 396, 397, 398, 399, 400, 406, 407, 408, 409, 410, 416, 417, 418, 419, 420, 426, 427, 428, 429, and 430 will be denied.

Each issued patent shall include the Figures that Mr. Hyatt relied upon at trial as evidence helping to establish written description support for his claims, and also include a reference to this Memorandum Opinion. A separate order shall issue in each case.

Date: 7/31/18

Royce C. Lamberth

Royce C. Lamberth
United States District Judge