

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHENZHEN TUOZHU TECHNOLOGY CO., LTD.,
Petitioner,

v.

STRATASYS, INC.,
Patent Owner.

Case IPR2025-00531
Patent 9,168,698

**PETITIONER'S OPPOSITION TO
PATENT OWNER'S DISCRETIONARY DENIAL BRIEF**

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- EX1003 Declaration of Dr. Andrew Wolfe (including CV)
- EX1004 US6,986,739B2 (US20030100824A1) to Warren et al (“Warren”)
- EX1005 US9,031,680B2 to Napadensky (“Napadensky”)
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- EX1010 RepRap Discussion Thread “Genetic Algorithm” (available at <https://reprap.org/forum/read.php?1,20208,page=1>) (“RepRap20208”)
- EX1011 US7,552,543B2 to Tomelleri (“Tomelleri”)
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- EX1016 Exhibit D of Infringement Contentions from Stratasys, Inc., v. Shenzhen Touzhu Technology Co., Ltd., et al., Case Nos. 2:24-cv-00644-JRG and 2:24-cv-00645-JRG (E.D. Tex. Nov. 14, 2024)
- EX1017 US20080195353A1 to Igasaki et al (“Igasaki”)
- EX1018 J.E. Carryer, R.M. Ohline, and T.W. Kenny, *Introduction to Mechatronic Design*, ISBN-13: 978-0-13-143356-4, Pearson Education, Inc., Upper Saddle River, New Jersey 07458 (2011)
- EX1019 J. Srihohi, I. Chopra, *Fundamental Understanding of Piezoelectric Strain Sensors*, Journal of Intelligent Material Systems and Structures, Vol. 11, P. 246-257, April 2000
- EX1020 https://web.archive.org/web/20060615115221/http://www.allelelectronics.com/cgi-bin/item/PE-49/466/PIEZO_ELEMENT.html (piezoelectric element product discussed in <https://reprap.org/forum/read.php?1,8028,8276#msg-8276>)
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- EX1037 Exhibit D - Exemplary Infringement Evidence for U.S. Patent No. 9,168,698 Stratasys, Inc. v. Shenzhen Tuozhu Technology Co. Ltd. et al., 2-24-cv-00644 (EDTX)
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I. INTRODUCTION

The PTAB is best suited to consider the patentability of ‘698 patent. Much like the multi-patent litigation at issue in *Tesla, Inc. v. Intellectual Ventures II LLC*, the ‘698 patent at issue here is part of “complex and diverse” multi-patent litigation spanning multiple patent families and numerous diverse technologies. IPR2025-00217, Paper 9 at 2-3 (Jun. 13, 2025). As explained in more detail in §III, *infra*, Petitioner has filed IPR petitions challenging nine different patents spanning six patent families that, while all nominally related to three-dimensional printing, are each directed to complex and technology distinct aspects of such systems.

The patents asserted by Patent Owner in the parallel District Court proceeding relate to varied areas of technology including software, robotics, video imaging, computer networks, material science, control systems, and various sensor technologies. This “diverse range of subject matter” along with “[t]he large number and vast scope of the patents asserted in the district court litigation” reveals that validity of these patents is best determined by the Board. *Id.* Indeed, IPR challenges of three of the patents involved in this multi-patent challenge have already been instituted. *See* IPR2025-00257, Paper 9; IPR2025-00311, Paper 9; IPR2025-00321, Paper 10. Institution in the present proceeding is thus warranted so that the tribunal best suited to review a “large number of patents involving diverse subject matter” (the Board) may weigh validity in each of the related IPR proceedings. *Tesla,*

IPR2025-00217, Paper 9 at 2-3. This is especially true here, where Petitioner had only been in the market for just over 2 years when Patent Owner filed suit. *Infra*, §II.

In addition to the diverse subject matter of the Patents in the parallel district court proceeding, numerous other factors favor against discretionary denial, including Petitioner’s “broad stipulation” that builds off of the stipulation recently endorsed by the Acting Director in *Tesla*. See IPR2025-00217, Paper 9 at 2 (“Petitioner has filed a broad stipulation”). Here, Petitioner’s stipulation includes all restrictions from the *Tesla* stipulation and further adds that Petitioner will not pursue “any ground that could be raised under §§ 102 or 103 on the basis of system art corresponding to the references that form the basis of any ground raised in IPR2025-00531” if this proceeding is instituted and remains instituted. EX1033.

In addition to this broad stipulation, which dispels any concern of overlap between the proceedings, the facts below show there is a great deal of uncertainty as to the beginning of the parallel district court proceeding and that the actual final resolution of that proceeding (which is likely to occur months after initial jury selection) will likely occur months after a Final Written Decision is issued in this proceeding. Furthermore, the merits of the Petition are robust because the prior art grounds are directly on point, which is exactly why Patent Owner now seeks to avoid the Office’s consideration of those grounds.

Regarding Patent Owner’s reach for §325(d) discretion, it likewise assumes too much. The *Advanced Bionics* factors weigh strongly against discretionary denial—especially where the examiner erred in his consideration of the prior art, as is the case here. Further, Patent Owner does not contend that the obviousness combinations here were posited by the examiner (they were not). The Petition’s newly cited prior art raise new issues not considered by the examiner. Again, the strength of these prior art grounds is truly why Patent Owner now seeks to avoid the merits in a PTAB trial.

The public deserves more. The PTAB’s very “purpose and design” as reiterated by Supreme Court precedent is fulfilled by addressing the merits of the prior art here, not by shunning this much-needed review before it starts. *Thryv, Inc. v. Click-To-Call Techs., LP*, 590 U.S. 45, 54 (2020) (“By providing for inter partes review, Congress, concerned about overpatenting and its diminishment of competition, sought to weed out bad patent claims efficiently”).

The Acting Director should pass this IPR petition on for consideration by the merits panel.

II. PETITIONER’S SETTLED EXPECTATIONS OUTWEIGH PATENT OWNER’S

The ‘698 patent was never “commercialized, asserted, marked, licensed, or otherwise applied in a petitioner’s particular technology space.” *Intel Corp. v.*

Proxense LLC, IPR2025-00327, Paper 12, pp. 2-3. Indeed, Stratasys has taken the position that it “does not intend to rely on the assertion that its own products or other instrumentalities practice the claimed invention.” EX1034, 9-10. When pressed for discovery into its practicing products, Stratasys first demanded that Bambu identify any such products under the *Artic Cat* framework, which requires the defendant to identify *unmarked* practicing products before the burden shifts to the plaintiff to explain why the marking obligation was met. EX1039, 38-39; EX1040, 2-4, 17-19. After Bambu served its *Artic Cat* letter, Stratasys failed to present any evidence that it met its marking obligations with respect to the ‘698 patent. *Id.*

As the Acting Director recently explained:

There may be persuasive reasons why the Board should review challenged claims several years after their issuance date. For example, ... a patent may have been in force for years but may not have been commercialized, asserted, marked, licensed, or otherwise applied in a petitioner’s particular technology space, if at all. These non-exclusive examples provide considerations that weigh against a patent owner’s claim of settled expectations and bears on the Director’s discretion.

Intel Corp. v. Proxense LLC, IPR2025-00327, Paper 12, pp. 2-3. Here, Stratasys’s lack of commercialization, marking, etc. should “weigh against a patent owner’s claim of settled expectations.” *Id.* The fact that the ‘698 patent (or any other patents

in the multi-patent litigation) has never previously been asserted also favors against discretionary denial.

Only recently has Patent Owner elected to become litigious (in 2024). This is the first suit involving the ‘698 patent. And Petitioner had received no pre-suit notice of alleged infringement of the ‘698 patent, nor had Petitioner had any reason to believe the ‘698 patent covered their products. It is also notable that the flagship 3D printer of Petitioner’s subsidiary company launched on Kickstarter in May 2022.¹ Petitioner could not have known to challenge the ‘698 patent sooner.

Furthermore, it was not until Patent Owner filed suit against Petitioner and its subsidiaries in 2024 that the public become aware of Patent Owner’s mistaken viewpoint of its claim scope. The Petition in this IPR proceeding is the prompt and direct result of Patent Owner’s very recent assertion of a claim scope that ensnares known prior art—a claim scope that the examiner would have never allowed if foreseen at that time.

In particular, the Summary of the ‘698 patent describes the patent is directed to “[a]n extruder or other tool head of a three-dimensional printer [that] is instrumented to detect contact force against the extruder, such as by a build platform or an object being fabricated.” EX1001, 1:25-28. Yet, Patent Owner has asserted

¹ See <https://www.3dprintingjournal.com/p/05-31-2022-bambu-lab-x1-debuted-on>

that the claimed requirement of “the one or more sensors configured to detect a current contact force between the fabrication tool and a separate structure” is met, not by a force sensor sensing a contact force between the extruder and a separate structure, but by an “extrusion force sensor” configured to sense an extrusion force experienced by the consumable printing filament that is being deposited by the printer. EX1037, 53-26. Patent Owner’s overly broad claim interpretation encompassing extrusion force sensors was unforeseeable because the extrusion force sensors sense a force on the consumable printing filament, not the extruder itself. In other words, Patent Owner is asserting its claims more broadly than is reasonable.

The PTAB’s very “purpose and design,” as reiterated by the Supreme Court, is fulfilled by addressing the merits of the prior art here, not by shunning this much-needed review before it starts. *Thryv, Inc. v. Click-To-Call Techs., LP*, 590 U.S. 45, 54 (2020) (“By providing for inter partes review, Congress, concerned about overpatenting and its diminishment of competition, sought to weed out bad patent claims efficiently”); *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261, 279-80 (2016) (describing the PTAB’s basic “purpose” and the public’s “paramount interest in seeing that patent monopolies ... are kept within their legitimate scope”). Patent Owner’s contention that this new “length of time” factor somehow overrules this mandate is an unwise invitation for an abuse of discretion.

III. THE COMPLEXITY AND DIVERSE TECHNOLOGY SCOPE OF THE ASSERTED PATENTS FAVORS INSTITUTION

Patent Owner’s assertion of a “large number and vast scope of the patents” directed toward “a diverse range of subject matter” in the parallel district court proceeding is the precise situation for which “the Board is better suited to review” issues of validity, just as was the case in *Tesla, Inc. v. Intellectual Ventures II LLC* IPR2025-00217, Paper 9 at 2-3 (Jun. 13, 2025). In total, Petitioner has filed IPR petitions challenging nine different patents from six different patent families that, while all related to the general technological area of three-dimensional printing, span a broad array of claim scopes and specific technologies within the broader classification of three-dimensional printing. For example, the various patents asserted by Patent Owner cover technologies as diverse as computing networks for remotely controlling rapid fabrication systems, specific techniques for operating a three-dimensional printer, determination of three-dimensional printing material properties, materials for plating a build plate of a three-dimensional printer, and determination and adaptation to a printer’s capabilities. The patents asserted by Patent Owner in the parallel district court proceeding claim details that require knowledge and understanding of three-dimensional printing to analyze, including:

- Remote control of a three-dimensional printer over a computing network including presentation of video images of the build process

and a three-dimensional model of an object to be fabricated (U.S. Pat. No. 8,562,324).

- A three-dimensional printer having a heated build platform for a 3D printer including a thermally conductive build plate carrying a non-tape polymer coating (U.S. Pat. No. 9,592,660).
- Software instructions for operating a three-dimensional printer to print layers of a purge tower between printing of successive layers of part material and support material to purge a print head when switching from a stand-by mode to an operating mode (U.S. Pat. No. 9,421,713).
- Generating a fabrication profile based on querying a printer's capabilities in response to receiving a request to fabricate an object, and generating machine-ready code for the same (U.S. Pat. No. 11,886,774).
- Controlling an extruder of a three-dimensional printer based on sensed and calculated contact force between the extruder and a separate structure (U.S. Pat No. 10,556,381).
- Controlling a component of a three-dimensional printer while depositing material based on a detected current contact force (U.S. 9,168,698).

- Automatic detection and acquisition of three-dimensional printer build material characteristics and using such characteristics to determine operational parameters for the three-dimensional printer (U.S. Pat. Nos. 10,569,466 and 11,167,464).
- Automatic capturing and analyzing of a three-dimensional printing process using a three-dimensional scanner to determine a status of a print job and identify flaws in an object being fabricated (U.S. Pat. No. 8,747,097).

The “complex and diverse litigation proceeding” involving a wide array of technologies relating to diverse areas of software, robotics, video imaging, computer networks, material science, control systems, and various sensor technologies spanning nine patents across six distinct patent families favors institution. *Tesla*, IPR2025-00217, Paper 9 at 2-3. As was the case in *Tesla*, “the Board is better suited to review a large number of patents involving diverse subject matter.” *Id.* As such, due to the “diverse range of subject matter” and “[t]he large number and vast scope of the patents asserted in the district court litigation” issues of validity are best determined by the Board. *Id.* Indeed, IPR challenges of three of the patents involved in this multi-patent challenge have already been instituted. *See* IPR2025-00257, Paper 9; IPR2025-00311, Paper 9; IPR2025-00321, Paper 10. Institution in the present proceeding is thus warranted.

IV. THE *FINTIV* FACTORS WEIGH IN FAVOR OF INSTITUTION—35 U.S.C. § 314(a)

A. *Factor 1: Whether the court granted a stay or whether evidence exists that one may be granted if an IPR is instituted*

Factor 1 is “neutral” because there is no indication that if the action is maintained and a subsequent motion to stay is requested, the court will deny a stay. *Nikon Corp. et al. v. Optimum Imaging Technologies, LLC*, IPR2024-01372, Paper 17 at 10-11 (PTAB April 23, 2025) (Factor 1 is neutral when no stay has been requested because the Board “will not attempt to predict how the court in the parallel district court proceedings would proceed if a stay is requested”). Patent Owner identifies a chart showing a generic “85%” denial rate for motions to stay before Judge Gilstrap yet provides no analysis as to the procedural posture or relevant circumstances for any of the particular cases for the identified motions to stay. Paper 7, 6. Patent Owner, of course, conveniently omits the fact that Judge Gilstrap has often granted a stay *after institution of IPR*—especially where the defendant/petitioner stipulates to be bound by the IPR “estoppel.” *See e.g.*, EX1031 (showing Judge Gilstrap’s reasoning for granting a stay after IPR is instituted). Nothing forbids such a motion to stay in the EDTX case here.

Here, Petitioner has filed IPR petitions challenging all of the asserted claims for all but one of the patents currently asserted in the district court, with pertinent and worthy prior art in each of the IPR petitions. Three of those Petitions have

already been instituted, five are pending, and Petitioner plans to file a Request for Director Review in the lone case that has been discretionarily denied. Institution of IPR here would further the opportunity for a stay in the EDTX litigation (refer to the example in EX1031) such that validity would be determined by the PTAB and thereby streamline the district court case. Thus, at a minimum, Factor 1 remains “neutral.” *Nikon*, IPR2024-01372, Paper 17 at 10-11; *Sand Revolution II, LLC v. Cont’l Intermodal Grp. - Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative) (“facts beyond our control and to which the Board is not privy”).

B. *Factor 2: Proximity of the court’s trial date to the Board’s projected statutory deadline for a Final Written Decision*

All of Patent Owner’s arguments with respect to Factor 2 effectively demand the Director should assume that jury selection will start on June 1, 2026. Discretionary denial should not be based on such premature assumptions.

Patent Owner’s assertion that the EDTX litigation will reach “a final resolution” in a jury trial before any final written decision in this forum (Paper 7, 1) is simply not true. Although a Final Written Decision for the present proceeding is expected to issue 4 months after the theoretical start of jury selection in EDTX on June 1, 2026 (EX1020, 1), any experienced patent litigator knows the beginning of jury selection is far from “a final resolution” (Paper 7, 1). Even if the jury trial were

to begin on June 1, 2026 (which is a false assumption that overlooks ten other plaintiffs also scheduled to start jury selection on that same date in the same courtroom), Patent Owner's assertion ignores the amount of time required to achieve a final judgment ripe for any appeal—after the resolution of post-trial motions. Indeed, an analysis of pendency of cases handled by Judge Gilstrap from LegalMetric reveals an average pendency for post-trial motions of 6.9 months after the jury trial. EX1028, 2. Therefore, the “final resolution” of the EDTX proceeding (if it occurs at all) would likely not occur until *sometime in early 2027*. By that time, the Board's Final Written Decision (predicted to issue Oct. 7, 2026 or earlier) would be in final repose or already under appeal. This IPR proceeding is the most efficient and prompt forum for achieving appealable finality, and it is the only forum that would address *any* of the prior references cited in the Petition after institution (refer to Factor 4). There is a meaningful difference between a theoretical date for the start of jury selection and an actual date of final resolution in the district court, a difference that should be seriously considered by the Board in assessing Factor 2. Patent Owner's Factor 2 analysis does not contemplate this difference.

Even more revealing, the most recent statistics for Judge Gilstrap reveal a median time-to-trial of 23.2 months for cases filed within the past three years, which would place *the beginning of the jury trial later in July 2026* based on the August 8, 2024 filing date for the complaint. EX2001, 7; EX2009. In such scenarios in

which the median time-to-trial indicates that the likely trial date “is reasonably proximate to the projected statutory deadline for a final written decision,” Factor 2 weighs in favor of the Board “not exercising [its] delegated discretion to deny institution.” *Cisco Systems, Inc. v. Croga Innovations LTD.*, IPR2024-01283, Paper 8 at 44 (PTAB Feb. 13, 2025). Petitioner here requests nothing more than the same Factor 2 reasoning afforded the petitioner in *Cisco. Id.*

Additionally, Patent Owner’s own actions have added even more uncertainty to the timing of the parallel District Court proceeding. Specifically, Patent Owner now seeks to add new products to the suit, including an entirely new printer – Petitioner’s flagship model with many new features – greatly expanding the work and potentially delaying resolution as both parties will have to prepare and submit briefing related to alleged infringement of these newly added products and potentially additional claim construction arguments relevant to the issue of infringement of these new products.

Weighing even further in favor against discretionary denial, Judge Gilstrap currently has *eleven* trials simultaneously scheduled to start jury selection on June 1, 2026, all of which Patent Owner oddly ignores. *See* EX1025, 1-8. By advocating for discretionary denial based on the scheduled jury selection date, Patent Owner is insisting that the Board must assume that Judge Gilstrap will prioritize the Patent Owner’s litigation over the *ten other* cases scheduled to begin jury selection on the

same day. There is no dispute that seven of those ten other cases are complex patent trials, yet Patent Owner has offered no evidence to suggest that Judge Gilstrap will favor the Patent Owner in this proceeding over the other patent owners. Indeed, the litigation here is not even the only one of the identically scheduled trials in which co-pending IPR petitions have been filed.² It would be unjust for the Patent Office to assume that an Article III judge would prioritize one patent owner (Stratasys) over all seven others (and over the three other non-patent plaintiffs). Yet, by advocating for discretionary denial, Patent Owner is asking the Director to assume that there is a 100% chance that Patent Owner's proceeding will be the one out of the eleven cases actually selected to begin trial on June 1, 2026. Even in a neutral statistical analysis, the chance of the present parties being selected as the one trial to start jury selection on June 1, 2026 out of eleven cases simultaneously scheduled for the same date is small—approximately 9%.

² Of the EDTX cases currently scheduled to simultaneously start jury selection on June 1, 2026, the various defendants have filed IPR petitions in at least: 2:24-cv-00260 (*Maxeon Solar Pte. Ltd. v. REC Solar Holdings AS*); 2:24-cv-00540 (*Hermes IP Management LLC v. Samsung Electronics Co. Ltd. et al.*); 2:24-cv-00634 (*OS-New Horizon Personal Computing Solutions Ltd. v. Samsung Electronics Co. Ltd. et al.*).

Furthermore, Patent Owner's assertion that the "majority of cases do not reach a jury trial" (Paper 7, 9) does not distinguish between patent and non-patent cases and also ignores the fact that institution of IPR petitions is a factor that significantly contributes to settlement between parties, thus causing such cases to "not reach a jury trial." Indeed, recent statistics issued by the Patent Office reveal that institution of IPR petitions, which demonstrates validity issues with patents challenged by such petitions, can significantly contribute to settlement between the parties. EX1032, 9. As such, institution of the present petition would contribute toward settlement between the parties and reduce the burden on the District Court. *See, e.g.*, IPR2025-00100, Paper 15 (Settlement After Institution).

These additional considerations indicate that Factor 2 weighs against exercising discretion to deny IPR.

Finally, while Patent Owner cites to several cases to support its assertion that any gap between the predicted Final Written Decision date and the scheduled jury selection date for the parallel District Court proceeding causes Factor 2 to weigh in favor of discretionary denial (Paper 7, 11-12), this assertion ignores the fact that numerous decisions issued since the withdrawal of Former Director Vidal's *Fintiv* memo indicate that a *Sotera* stipulation (a stipulation with narrower exclusionary effect than the much broader stipulation provided in the present case, which is even more restrictive than the stipulation in *Tesla*) favors institution when the gap

between jury selection and the expected FWD date is four months or less, as is the case here. *See e.g.*, IPR2025-00196, Paper 7 at 10-11, 14-16, 18; IPR2025-00120, Paper 9 at 6-10; IPR2025-00100, Paper 10 at 27-30, 34; IPR2025-00307, Paper 18; IPR2024-01487, Paper 8 at 36-39; IPR2025-00021, Paper 14 at 9-12; IPR2025-00124, Paper 14 at 9-12; IPR2024-01463, Paper 14 at 13-14, 16-17, 19; IPR2024-01472, Paper 9 at 8-11. Additionally, the gap between the expected FWD date and the currently scheduled start of jury selection would be only two months (similar to the time gap in *Tesla*) if not for the two month delay by the PTAB in issuing the Notice According Filing Date after the present Petition was filed.

C. *Factor 3: Investment in the parallel proceeding by the court and the parties*

The investment in the parallel proceedings is low. The related District Court proceeding remains in its early stages with much of the work yet to be done. Meaningful discovery is only just beginning, with the parties only recently filing the first round of motions to compel. EX1035; EX1036. Notable case milestones like identifying claim terms and a claim construction hearing have not been reached.

As is clear from the existence of early discovery motions, the district court case is in its infancy. Patent Owner's briefing acknowledges the case's early stage, referring to many "substantial investments" that have not yet been made. Indeed, while preliminary infringement contentions and invalidity contentions have been

served, discovery is only just beginning—contentions are not finalized, depositions have not been taken, and expert discovery is distant on the horizon.

So far, each party has served an initial set of interrogatories and requested document production, but as evidenced by the pending motions to compel, neither party is satisfied with the other's productions. Indeed, Patent Owner has dragged its feet on producing documents fundamental to the case, including those pertaining to practicing products, prior art products, and invention documents. In fact, when Petitioner had filed its motion, Patent Owner had provided no code and only 2,288 documents, with less than 200 marked confidential to compel. EX1036, 1.

Aside from earlier productions of *less than 200* confidential documents, Patent Owner only recently began meaningful productions of these fundamental documents on June 27, 2025. Even still, Patent Owner produced only 94 more documents and cannot commit to a schedule for its remaining productions. This meager production does not address the fundamental deficiencies outlined in Petitioners' motion, and Patent Owner's inability to commit to a production schedule suggests not even it knows when it will do so.

Nor does Patent Owner accurately portray Petitioner's production. While Patent Owner touts the "tens of thousands of pages of documents" that have been produced, it conveniently omits Patent Owner's own characterizations of a substantial amount of this production

[Petitioners] had not produced *a single non-public technical document*. The “over 8,000 documents” referenced in [Petitioners’] letter are almost exclusively printouts of publicly available web pages, with *over three-quarters of the documents being printouts of a third-party website* (GitHub), most of which are simply screen captures of comments left by users on that site.

EX1029.

Notable district court milestones are still on the distant horizon. There is no dispute that completion of fact discovery is not until January 12, 2026—months away even assuming the discovery schedule is not further extended. EX1020, 4. And, similarly, no depositions have yet been taken and expert discovery has yet to begin. *Id.* (expert discovery not to be completed until February 2026). And the parties have neither argued nor briefed claim construction issues. EX1020, 5. Indeed, the parties have not even exchanged a list of identified claim terms. *Id.* Thus, the bulk of the district court milestones have yet to occur—and certainly little or no investment from the parties regarding the merits of prior art/invalidity disputes. In accordance with PTAB precedent, the current stage of the parallel proceeding indicates that Factor 3 weighs against discretionary denial. *Sotera Wireless, Inc. v. Masimo Corporation*, IPR2020-01019, Paper 12 at 16-17 (Dec. 1, 2020) (designated “precedential” Dec. 17, 2020) (holding that Factor 3 weighs against discretionary denial when no *Markman* briefing has yet occurred as this indicates “relatively

limited investment in the parallel proceeding”). Petitioner here requests nothing more than the same Factor 3 reasoning afforded the petitioner in the *Sotera* precedent. *Id.*

Furthermore, in addition to the parallel District Court proceeding being still in a relatively early stage, Petitioner’s diligence in filing the instant Petition in a timely manner further indicates that Factor 3 weighs against discretionary denial. Specifically, Petitioner was diligent in obtaining counsel, identifying highly relevant prior art, securing the declaration testimony of Dr. Wolfe, and preparing the Petition—all in less than 6 months of the August 8, 2024 filing of the Complaint in EDTX. *See* Paper 6, 1; EX2009. The PTAB has repeatedly (and justly) reasoned that “Petitioner’s diligence in filing the Petition also weighs in favor of not exercising discretion to deny institution.” *Peag LLC et al. v. Varta Microbattery GMBH*, IPR2020-01212, Paper 8 at 20 (PTAB Jan. 6, 2021); *see also Dish Network LLC v. Broadband iTV, Inc.*, IPR2020-01332, Paper 14 at 28-29 (PTAB Jan. 27, 2021). Patent Owner’s Factor 3 analysis does not contemplate this fact when reaching its flawed conclusion.

D. *Factor 4: Overlap between issues raised in the petition and in the parallel proceeding*

Factor 4 weighs strongly in favor of institution because, in light of the recent *Tesla, Inc. v. Intellectual Ventures II LLC*, IPR2025-00217, Paper 9 at 2 (Jun. 13,

2025) decision, Petitioner served Patent Owner (and subsequently filed with the Board) a stipulation for this proceeding that includes all restrictions from the *Tesla* cases and takes the stipulated restrictions even one step further. *See* EX1033. Petitioner has similarly submitted stipulations that are at least as restrictive as that in *Tesla* for all of the other IPR proceedings involving Petitioner and Patent Owner. Specifically, Petitioner's stipulation for the '698 patent plainly states:

If IPR is instituted in IPR2025-00531, unless institution is later vacated, reversed or otherwise withdrawn by rehearing or Director Review, Shenzhen Tuozhu and the other defendants named in the related District Court Case No. 2:24-cv-00644 (E.D. Tex.) and declaratory judgment plaintiffs in the related District Court Case No. 2:25-cv-00465 (E.D. Tex.) stipulate that they will not pursue in the 2:24-cv-00644 case or the 2:25-cv-00465 case, against the '698 Patent, ***the specific grounds asserted in IPR2025-00531, (ii) any other ground that was raised or could have been reasonably raised in an IPR*** (i.e., any ground that could be raised under §§ 102 or 103 on the basis of prior art patent or printed publications), ***(iii) any ground based on a combination of system prior art (i.e., prior art that is neither a patent or printed publication) and the references that form the basis of any ground raised in IPR2025-00531, or (iv) any ground that could be raised under §§ 102 or 103 on the basis of system art corresponding to the references that form the basis of any ground raised in IPR2025-00531.***

EX1033. In other words, if the Board proceeds to review the '698 patent in a PTAB trial, there will be no overlap with the parallel litigation because the litigation defendants will not pursue in the district court any “ground that was raised or could have been reasonably raised”; *any ground that uses any of “the references that form the basis of any ground” raised in the Petition*, whether alone or in combination; or *any ground based on “system art corresponding to the references that form the basis of any ground raised” in the Petition. Id.*

To be clear, if the Board institutes and maintains the present IPR proceeding, the Warren, Eshed, Calderon, RepRap20208 and Napadensky references that form the basis of the Petition grounds cannot be used in any invalidity ground whatsoever in the related litigations. Additionally, if the present IPR proceeding is instituted and not later revoked, systems described in any of Warren, Eshed, Calderon, RepRap20208 and Napadensky cannot be used in any invalidity ground whatsoever in the related litigations. The limited district court invalidity grounds that remain include system art alone or system art in combination with other prior art never presented in the IPR grounds, and in both scenarios, the relied upon system art is required to be distinct from systems described in any of the references relied upon in the grounds of the present Petition. *See* EX2007, 89-103. As such, there will be no overlap. None.

This broad stipulation, which is broader than both the stipulation provided in the precedential *Sotera* case and the stipulation in the recently issued *Tesla* decisions, “ensures that an inter partes review is a ‘true alternative’ to the district court proceeding” and “mitigates any concerns of duplicative efforts between the district court and the Board, as well as concerns of potentially conflicting decisions.” *Sotera*, IPR2020-01019, Paper 12 at 18-19 (designated “precedential” Dec. 17, 2020). This broad stipulation “address[es] any concerns about overlap between the issues presented in the two for a.” *Ocado Group PLC v. AutoStore Technology AS*, IPR2021-00311, Paper 11 at 17 (PTAB June 28, 2021).

As Patent Owner identified in its Request for Discretionary Denial, Petitioner has identified four “system art” references in its District Court invalidity contentions. Paper 7, 16-18. There is no dispute these system art references are unavailable for consideration in this IPR. But that is where Patent Owner’s factual assertion ends and its error-riddled theories begin. Fatally, Patent Owner has identified no overlap between the identified system art references and the distinct publication references relied upon in the present proceeding. *Id.* In other words, Patent Owner presents no evidence or analysis that the “system art” references identified in Petitioner’s District Court invalidity contentions are derived from or describe the same or similar systems as those disclosed by the printed publication prior art relied upon in the IPR grounds here. Critically, Patent Owner cannot do so because no such connection

exists. And furthermore, Petitioner's stipulation forbids Petitioner from raising such grounds in the District Court proceeding should this IPR be instituted and maintained.

The broad stipulation offered by Petitioner in the present proceeding ensures that, should the present IPR proceeding be instituted and maintained, Petitioner is indeed "restrained from asserting very similar obviousness theories in the Related Litigation that include only minor differences from the Grounds raised in this Petition by including unpublished system art." Paper 7, 18. In light of Petitioner's broadly restrictive stipulation, Factor 4 strongly favors against exercising discretion to deny IPR.

Petitioner's new stipulation should be considered in this case as it is submitted responsive to recent material changes in the application of the *Fintiv* factors in recent Director Discretionary Denial Decisions that could not have been reasonably foreseen prior to the decisions in *Tesla* and *Shenzhen Tuozhu Technology Co. LTD v. Stratasys, Inc.*, IPR2025-00354, Paper 11 (PTAB June 12, 2025). Upon becoming aware the Office had made this fundamental shift in application of the *Fintiv* factors, Petitioner promptly provided its new, broader stipulation to Patent Owner.

E. *Factor 5: Whether the petitioner and the defendant in the parallel proceeding are the same party*

Petitioner is a defendant in the parallel EDTX proceeding. As such, this factor weighs in favor of discretionary denial.

F. *Factor 6: Other circumstances that impact the Board's exercise of discretion, including the merits*

Numerous other factors favor against discretionary denial of the present Petition and in favor of consideration of the prior art challenges presented in the Petition on the merits.

1. The strong merits of the Petition favor institution

On the merits and pertinence of the prior art cited in the Petition, the IPR Grounds here strongly favor institution. As one example, the merits of the instant Petition are strong because Petitioner identified multiple printed publications that were not before the examiner during prosecution that expressly disclose the feature thought to be missing from the prior art at the time of allowance, all of which is confirmed by the only expert testimony in the record.

Patent Owner mentions that Calderon was before the examiner. Paper 7, 22-23. But Calderon was not applied in any rejection, nor did the examiner discuss Calderon in the reasons for allowance. It was cited in an information disclosure statement by the applicant, not by the examiner, and provided among other references with no context or statement of relevance. EX1002, 47. Moreover, as

discussed below, Calderon is applied in a ground with prior art disclosing the express feature the examiner thought missing from the prior art and detailed expert testimony on why a POSITA would have sought to modify Calderon to include this feature. The examiner did not and could not have considered Calderon in this light. Patent Owner does not suggest discretionary denial under §325(d) is warranted, and it is not.

The remaining references, Warren, Eshed, RepRap20208 and Napadensky are new. The disclosures of these references are materially different from the art considered by the examiner. Had the examiner performed a thorough search, he would have readily found these references. Not only are they clearly directed to three-dimensional printing, but Warren and RepRap20208 plainly disclose the supposed invention of the '698 patent – controlling a three-dimensional printer in response to a current contact force while depositing material. However, the examiner's search was scant. The examiner identified only two references – Jang and Lipson – both of which were easily distinguishable. EX1001, face. Had the examiner effectively searched to find Warren or RepRap20208, the application that led to the '698 patent would not have been allowed.

The '698 patent is directed to “an extruder or another tool of a three-dimensional printer [that] is instrumented to detect contact force against the extruder.” EX1001, Abstract. “the resulting feedback data can be used in a variety

of ways to control operation of the three-dimensional printer during fabrication.”
The patent has one independent claim. *Id.*, claim 1. The prosecution history is short. The application that led to the ‘698 patent was rejected once, amended, and then allowed. EX1002, 38-46 (sole Office Action), 28-34 (response), and 16-22 (Notice of Allowance). The examiner’s search only uncovered two references – Jang and Lipson (discussed below).

The examiner’s reasons for allowance simply reproduced the entire independent claim 1, with no real indication of why the claims were allowed.

Allowable Subject Matter

1. Claims 14-28 are allowed over the prior art of record.
2. The following is an examiner's statement of reasons for allowance:
The prior art fails to teach or suggest a method comprising:
 - a. identifying build instructions for fabricating an object;
 - b. initiating a build using a three-dimensional printer comprising a fabrication tool and one or more sensors mechanically coupled to the fabrication tool, the one or more sensors configured to detect a current contact force between the fabrication tool and a separate structure;
 - c. detecting the current contact force based on a sensor signal from the one or more sensors; and
 - d. creating a control signal to control at least one component of the three-dimensional printer in response to the current contact force while depositing material during the build.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Reasons for Allowance, EX1002, 21

The amendments made to overcome the examiner's sole rejection, in a single Office Action, shed some light on what the examiner might have believed patentable. All claims were rejected based on an obviousness combination of Jang (6,129,872) and Lipson (7,625,198). The examiner did not apply Calderon or any of the other prior art that had been disclosed by the applicant.

In response to the rejection, the applicant amended the “detecting the current contact force” and the “creating a control signal” steps of claim 1 as follows:

14. (Currently amended) A method comprising:
identifying build instructions for fabricating an object;
initiating a build using a three-dimensional printer comprising a fabrication tool and one or more sensors mechanically coupled to the fabrication tool, the one or more sensors configured to detect a current contact force between the fabrication tool and a separate structure;
detecting the current contact force based on a sensor signal from the one or more sensors; and
~~responsively~~-creating a control signal to control at least one component of the three-dimensional printer in response to the current contact force while depositing material during the build.

Response to Office Action, EX1002, 29

The applicant then distinguished Jang, agreeing with the examiner that Jang “fails to disclose the step of detecting contact force between the fabrication tool and a separate structure.” EX1002, 32. The applicant distinguished Lipson, which was cited for its force sensor, as there being “no suggestion here to use the signal from the force sensor as feedback during a build. In the device of Lipson, the force sensor is simply used to detect a threshold force indicating a Z axis position of a newly loaded tip.” *Id.*, 33. Notably, Lipson’s force sensor was also not mechanically coupled to the fabrication tool, as required by the claim, but a part of a calibration device mounted on the substrate. The examiner withdrew the rejections and allowed the application in the next action.

Based on the allowance immediately following these amendments and arguments, it is apparent the examiner felt the prior art lacked creating a control signal to control the three-dimensional printer “in response to the current contact force while depositing material during the build.” The amendment clarifying that detecting the current contact force is “based on a sensor signal from the one or more sensors” was simply clarifying the contact force comes from the sensor, to prevent an unintended broad reading.

The prior art cited in the current petition, Warren and the combination of Calderon and RepRap20208, materially differ from Jang and Lipson in ways relevant to the claims. Among other things, Warren and RepRap20208 disclose the feature the examiner thought was missing from the prior art – creating a control signal to control the three-dimensional printer “in response to the current contact force while depositing material during the build.”

Warren is the base reference in Petition Grounds 1A and 1B. As described in the Petition, Warren discloses a force sensor on the fabrication tool for sensing contact between the fabrication tool (“dispenser 3700”) and a separate structure (a “substrate”). Warren describes “[a] vibration sensor 3730 and a transducer 3740 are attached to the dispenser 3700” and when “[t]he vibration imposed on the dispenser 3700 is changed, e.g., modulated, by the contact of the 3700 dispenser with the substrate 3710...[t]he transducer 3740 senses and transfers the changed vibration

signal to an amplifier...which then creates a feedback signal that is generally proportional to the intensity of the physical contact of the dispenser 3700 with the substrate 3710.” EX1004, [0300], [0302]. The signal that is “generally proportional to the intensity of the physical contact” is, of course, a signal indicating the current contact force. “[T]he feedback signal may be used by a z-controller processor 3750,” Warren’s controller, “to maintain a desired force of contact between the dispenser 3700 and the substrate 3710.” *Id.*, [0313], [0302], FIG. 4.

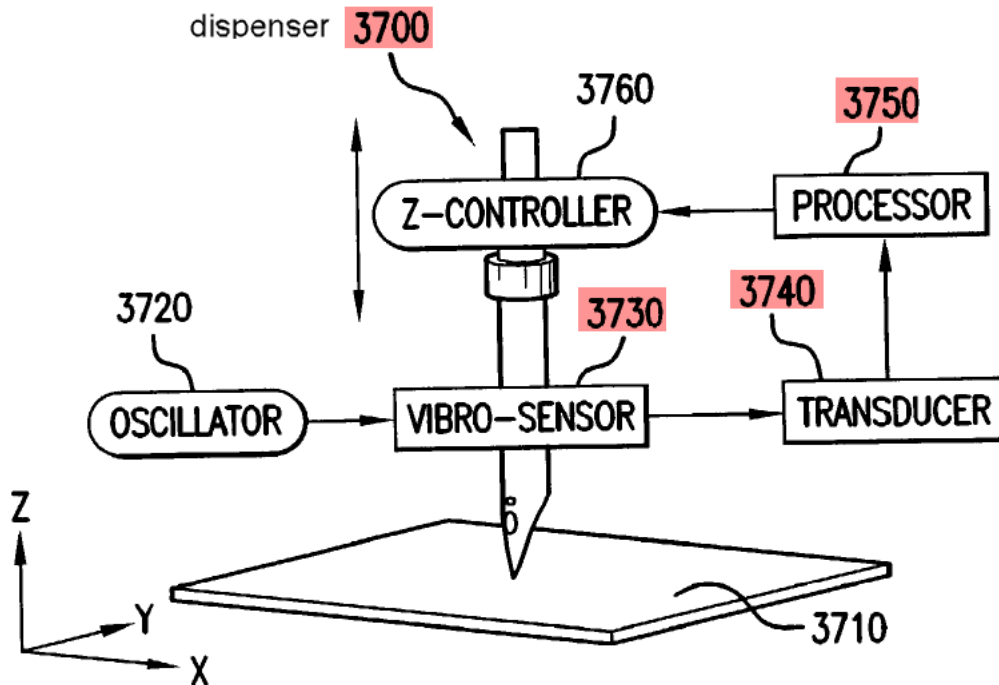


FIG. 18

Warren, FIG. 18, EX1003 (annotated)

Warren discloses detecting the current contact force for dispensing “onto conformal surfaces as the force feedback control continuously corrects for

dispensing structure's z-height position as the height of the substrate surfaces changes." EX1003, [0316], [0293], [0301-0304], FIG. 22A; EX1003, ¶91.

Warren's "vibro-sensor 3730" and "transducer 3740" are on the fabrication tool ("dispenser 3700") and detect "a current contact force" (producing a signal "generally proportional to the intensity of the physical contact"), where that current contact force is "between the fabrication tool and a separate structure" (between "dispenser 3700" and the "substrate"). Warren creates a control signal in response to the current contact force to enable dispensing "onto conformal surfaces as the force feedback control continuously corrects for dispensing structure's z-height position as the height of the substrate surfaces changes." EX1003, [0316].

Thus, Warren is not cumulative of the prior art applied by the examiner, nor can Grounds 1A and 1B be characterized as substantially the same as considered by the examiner.

What is more, Warren satisfies the claims without resort to Patent Owner's strained, overly broad interpretations advanced to argue infringement. *See*, §II, *supra* (discussing PO's broad infringement allegations in EX1037). Warren's force sensor is sensing contact, and thus contact force, between Warren's fabrication tool and a separate structure, not the accused extrusion force experienced by the printing filament.

Calderon is used with RepRap20208 in an obviousness combination in Grounds 2A and 2b. Calderon discloses “machines which form three-dimensional objects by depositing modeling material,” *i.e.*, three-dimensional printers. EX1009, 1:5-10, Abstract. Calderon describes a “sensor assembly can be mounted to the extrusion head.” *Id.*, 4:61-63. “Contact between the tip of nozzle 132 and the substrate 128 is monitored by [the] sensing means.” *Id.*, 9:63-10:23. A POSITA would understand that sensing contact between the nozzle tip 132 and the substrate 128 is sensing a current contact force, namely the presence or absence of a contact force.

described as “a foam plastic” such as “blue polystyrene material” or “water soluble wax.” *Id.*, 2:15-22.

RepRap20208 is relied on as a secondary reference in Grounds 2A and 2B for its disclosure of using a “strain gauge on the extruder mount” for current contact force sensing and using that current contact force to enable “collision detection” to “have the machine shut down” if a collision occurs, i.e., a moving portion of the printer erroneously collides with something else like the object being printed or another obstruction. EX1010, 13-14, 19; Petition, pp. 46-56 and 58-63. RepRap20208 is thus materially different from and not cumulative of the prior art applied by the examiner, because it discloses detecting a current contact force (with a “strain gauge”) on the fabrication tool, and using that current contact force to detect collision of the fabrication tool with a separate structure, and shut the machine down. EX1010, 13-14, 19. RepRap20208’s inclusion in Grounds 2A and 2B further distinguish Grounds 2A and 2B from the arguments advanced by the examiner.

What is more, the Calderon-RepRap20208 combination satisfies the claims without resort to Patent Owner’s strained, overly broad interpretations advanced to argue infringement. *See*, §II, *supra* (discussing PO’s broad infringement allegations in EX1037). RepRap20208 is sensing current contact between Calderon’s extruder and a separate structure, not the accused extrusion force experienced by the printing filament. Had the examiner known Patent Owner was going to argue such a broader

interpretation of the claims, it would have availed the examiner of yet further prior art to reject the claims.

The examination of the '698 patent was meager. Any reasonable search should have readily found the prior art identified in the Petition. It was not hard to find. Warren, for example, is a published US application whose abstract describes “an apparatus and methods for depositing materials on a substrate,” i.e., three-dimensional printing, and large swaths of Warren describe sensing “contact force.” EX1004, Abstract, [0285]-[0302] and [0313]-[0316] (almost 30 mentions of “contact force” and “force” and several paragraphs describing how to use it), and FIG. 22A (flow chart discussing detecting “contact force” and changing operation based on “contact force”). Another thread from the RepRap forum (Touch Sensor and Automated Calibration, <http://forums.reprap.org/read/php?1,8028>) was disclosed in the parent application, which should have triggered the examiner to look for other relevant threads. MPEP §609.02 (“The examiner of the continuing application will consider information which has been considered by the Office in the parent application.”). However, there is no evidence the examiner did.

Failure to identify and apply the highly pertinent teachings of these references to reject the claims “*was error in the prosecution* leading to the issuance of” the '698 patent due to the fact that “the Examiner was simply not aware of” these references. *Oticon Medical AB v. Cochlear Limited*, IPR2019-00975, Paper 15 at

19-20 (PTAB Oct. 16, 2019) (designated precedential: Mar. 24, 2020). Where, as here, “[t]he Petition...presents different prior art than the Office was aware of,” this constitutes error by the Office during prosecution under the second prong of the *Advanced Bionics* framework and as such, discretionary denial under §325(d) would be inappropriate in the present case. *Id.*

As discussed above, the examiner mistakenly believed that the prior art did not disclose creating a control signal to control the three-dimensional printer “in response to the current contact force while depositing material during the build.” Yet this feature is disclosed by the references applied in the Petition. The fact that the Petition identifies two distinct grounds that each separately disclose the feature thought to be missing from the prior art by itself indicates the strong merits of the Petition. As such, for this reason alone, Factor 6 strongly favors institution.

2. Patent Owner’s merit-based arguments fail to identify any flaws in the grounds presented in the Petition

Patent Owner’s merit-based arguments (Paper 7, 25-33) should be dismissed for both policy interest reasons and because Patent Owner’s arguments fail to show any actual flaws in the Petition’s application of the proposed prior art combinations to the challenged claims.

First, Patent Owner’s merit-based arguments fly directly in the face of the spirit of the March 26, 2025 Memorandum by the Director regarding “Interim

Processes for PTAB Workload Management” (Director Memo). The new bifurcated process is intended to streamline the PTAB procedures and reduce the workload on the Board by splitting discretionary considerations from merit-based determinations for each petition. By including merit-based arguments into the Request for Discretionary Denial, Patent Owner is essentially insisting that the Director and the panel of consulting PTAB judges tasked with assessing discretionary considerations should also conduct a full merits review for every Petition prior to the assigned three-member PTAB panel repeating that same review. This insistence by Patent Owner is directly contrary to the efficiencies that the new bifurcated process is intended to achieve. Indeed, Patent Owner’s theory is belied by the Patent Office’s recent “FAQs,” which emphasized that “[t]he parties should not treat a discretionary denial brief or opposition as an additional opportunity for merits briefing.”³

If the Director were to conduct a full merits analysis at this initial discretionary consideration stage, such an outcome would invite every future Patent Owner to include merit-based arguments in the request for discretionary denial and thus turn the new, streamlined bifurcated process back into a unified process in which a single

³ https://www.uspto.gov/patents/ptab/faqs/interim-processes-workload-management?utm_campaign=subscriptioncenter&utm_content=&utm_medium=email&utm_name=&utm_source=govdelivery&utm_term= at FAQ no. 25.

entity, the Director and panel of consulting PTAB judges, would be tasked with conducting both discretionary and merits analysis on an accelerated schedule from the standard six-month time frame for the PTAB to make institution determinations. The Board should decline this invitation from Patent Owner to conduct a full merits analysis as part of the discretionary considerations phase.

Second, as discussed above, the merits of this case are strong because the Petition advances grounds based on not one, but two grounds that each disclose the feature thought to be missing from the prior art.

In pot-shot like attacks, Patent Owner makes conclusory assertions about supposed deficiencies in the Petition grounds, with no explanation. As best as their assertions can be understood, they are meritless, wrong and do not detract from the strength of the Petition.

Grounds 1A and 1B

Patent Owner complains that citations to Warren were provided to its publication by paragraph number, when they felt it should cite the patent. Paper 7, 25-26. Patent Owner, however, has overlooked that the Petition identified both as supporting Grounds 1A and 1B. Petition, iii (referencing “US6,986,739B2 (US20030100824A1) to Warren et al (‘Warren’)”). Moreover, the paragraph citations definitively identify the relied upon disclosure, and any differences between the disclosure of the published application and patent would necessarily be

clerical in nature, due to the prohibition to new matter in amendments. Patent Owner is not prejudiced.

Patent Owner asserts there is no motivation to combine different embodiments of Warren, none of the reasons provided by Petitioner are sufficient, there is no express motivation in Warren, and that Petitioner has ignored Warren's teachings to support impermissible hindsight. Paper 7, 26-27. Apart from this laundry list of complaints, a single citation to the Petition and a single citation to Warren, Patent Owner has not explained the basis for the supposed deficiencies.

Indeed, the Petition did articulate motivations to combine – multiple reasons are explained over four pages and each reason is backed with citation to detailed expert testimony provided by Petitioner's expert Dr. Wolfe. Petition, 13-16. Patent Owner has provided no expert testimony, or even attorney argument, explaining why they think the many provided reasons are insufficient. Warren, itself, does invite combining features. Warren says its "technology has a plurality of aspects that...combine to make a tool capable of producing a modeled structure through 3D direct construction," "dispenser 3700 need not be limited to these implementations," and "dispenser 3700 may be implemented differently." Petition, 13-14 (citing EX1004, [0093], [0294] and [0299]).

Patent Owner's complaint that Warren's "vibrating force sensor embodiments already teach a high-precision solution that uses capillary dispensers" and "there is

no analogous teaching for the through-nozzle dispenser embodiments,” ignores the obviousness combination applying the vibrating force sensing to the through-nozzle dispenser embodiments and multiple, expert backed reasons for the combination. Paper 7, 27; Petition, 13-16. Regardless, it does not matter. The Petition expressly maps both dispenser types to the claims. *See, e.g.*, Petition, 19 (“the capillary vibro-sensor dispenser and/or the through-nozzle dispenser”). The proposed combination is unnecessary for the Petition’s success in rendering claims unpatentable.

Patent Owner’s complains that Warren does not explain how to calculate the contact force from the change in amplitude sensed by its vibration sensor and that Petitioner provides no explanation of how a skilled artisan would have done so. Paper 7, 28. But Warren expressly teaches that the “change in amplitude is proportional to the force of contact between the dispenser and the substrate.” Petition, 20 (citing and quoting EX1004, [0313]). Proportionality is a direct mathematical relationship taught to second graders, so calculation of the force would be trivial. And calculating force using a vibration sensor is well known. Petition, 20 (citing EX1003, ¶86 (expert noting the well-known conversion) and corroborating examples EX1012, [0120-121] (“scanning measuring force”), [0128-129] (“touch detecting measuring force”), and EX1017, FIG. 4). Also, there is reason to calculate the force, because Warren expressly teaches its method determines whether “contact

force as desired?” EX1004, FIG. 22A (cited Petition, 9, 20, 22 and 23 in discussion of this claim limitation).

Grounds 2A and 2B

Patent Owner complains that RepRap20208 has not been shown to be a printed publication. Paper 7, 28-30. Yet, the Petition details, with citation to testimony by the internet forum’s founder and moderator, that RepRap20208 was published on the RepRap three-dimensional printer development project internet forum in January 2009, which was accessible to the public without requiring login since its inception in March 2005, ordered by subject matter and keyword searchable. Petition, 2 (citing EX1014, ¶¶3-12). In fact, the inventors of the ‘698 patent knew of and found threads on the RepRap forum, as evidenced by their having disclosed a different thread to the USPTO. EX1001, front. Patent Owner’s complaint that the Petition does not identify specific keywords feigns ignorance of how keyword searching would work (e.g., the thread discusses force sensors, e.g. “strain gauges,” and collision detection). Patent Owner’s complaint that the thread title “Genetic Algorithms” is not descriptive likewise feigns ignorance that genetic algorithms are types of algorithms for, among other things, system control optimization which in the context of a three-dimensional printer development would be sensor based control optimization.

Patent Owner's conclusory complaints about supposed lack of motivation to combine Calderon and RepRap20208 seem simply to assert that Calderon works, so there is no room for improvement. Paper 7, 30-31. Grounds 2A and 2B argue "a POSITA would have been motivated to implement collision detection after initialization, for example, using one or more strain gauges on the extrusion head mount, as suggested by RepRap20208, rather than Calderon's suggestion of 'monitoring a change in the servo drive current' to enable collision detection as well as to provide 'a sensing means,' as called for by Calderon to monitor 'contact between the tip of the nozzle 132 and the substrate 128.'" Petition, 49. Patent Owner's complaint ignores the Petition's discussion of how Calderon invites the combination by providing "a long list of conventional sensors including 'a magnet proximity switch, a Hall sensor, a Wiegand wire, a reed switch, a capacitive sensor or an inductance sensor.'" Petition, 44 (citing EX1009, 6:37-47). Calderon, himself, appreciated that many different types of sensors would work. Patent Owner's complaint also ignores the Petition's lengthy discussion of advantages of using RepRap20208's strain gauge and employing collision detection with it. Petition, 48-56. The Petition's citation to expert testimony Patent Owner complains of was properly provided to explain the POSITA's background knowledge about strain gauges, the sensing described by Calderon, and explaining the discussion within the RepRap20208 forum. *See*, EX1003, ¶¶165-173 (citing textbook corroboration

EX1018). And, notably, Patent Owner's complaints of deficiencies in the Petition's rationales are themselves attorney argument, unsupported by expert testimony.

Patent Owner's complaint that the Petition does not identify "identifying build instructions for fabricating an object" has overlooked the Petition's citation to Calderon's description of Calderon using "a file describing the geometry of a part 109 to be created," where the file includes "volume elements 110 corresponding to shapes that can be extruded from a nozzle." Paper 7, 31-32; Petition, 57 (citing EX1009, 4:19-33). Regardless, the simple fact is that Calderon's system builds an object, and so necessarily build instruction for fabricating an object have been identified.

Patent Owner's complaint that the Petition does not explain how a strain gauge senses force ignores basic knowledge of a POSITA, the reason for the Petitioner's citation to its expert declaration (which, in turn, cites textbook corroboration). Paper 7, 32; *see*, EX1003, 167 (discussing expected success in the combination, including "the use of strain gauges to sense force were commonplace at the time of the '698 patent in 2012" and citing a corroborating textbook EX1018).

Finally, Patent Owner's complaint that certain dependent claims have improperly resorted to common sense or a POSITA's knowledge is meritless. Paper 7, 32-33. By way of example, Patent Owner's first complaint relates to claim 2 that recites "the at least one component of the three-dimensional printer [that the control

signal of claim 1 controls] controls a feed rate for a build material used in the build.”

The Petition explains, with citation to expert testimony, how RepRap20208’s teaching to “have the machine shut down” encompasses stopping the feed of build material (feeding build material is an operating function of “the machine”), and thus the “at least one component” that receives the instruction to “shut down” is one that “controls a feed rate for build material.” Petition, 63-64 (citing EX1003, ¶¶189-190).

This use of expert testimony to explain what a POSITA would understand from the prior art is exactly the purpose for expert testimony that has been endorsed by the Acting Director. The discussion does not invoke common sense to supply a missing limitation, because the limitation was present in RepRap20208. Patent Owner’s other complained of examples are similar (e.g., claim 4 shutting down encompasses shutting down the component that controls the z-axis movement, claim 5 collision is determined by comparison to an expected contact force, claim 7 collision indicates a fabrication error, claim 8 collision requires disengaging from the impacted object, claim 9 shutting down encompasses stopping the feed of build material, claim 12 collision is determined by comparison to a specified contact force). Patent Owner is grasping at straws that are not there.

The above discussion of Patent Owner’s merit-based arguments only scratch the surface. However, based on the recently issued Patent Office guidance that “[t]he parties should not treat a discretionary denial brief or opposition as an additional

opportunity for merits briefing,” Petitioner will reserve additional discussion of the merits of the Grounds advanced in the Petition for the Petitioner’s Reply after institution. *See* FAQs for Interim Processes for PTAB Workload Management at 25.

3. The “additional factors” enumerated in the Director Memo favor institution

Reliance on Expert Testimony

Patent Owner’s assertions regarding reliance on expert testimony (Paper 7, 21-22) do not shift discretionary denial considerations. Petitioner properly relies on expert testimony from Dr. Wolfe to support the arguments made in the Petition—including detailed and focused testimony on how a POSITA would have predictably combined the identified references and how such combinations apply to the challenged claims. Here, Dr. Wolfe provided important context not available to the examiner during examination regarding the knowledge of a POSITA and the understanding that a POSITA would have gathered from the cited prior art references. Patent Owner’s arguments regarding reliance on expert testimony ignore the underlying reason for this factor. The length of the expert declaration is a reflection of the number of claims, the requirements for a fulsome analysis under *KSR* and other precedent, and the PTAB’s own rules at 37 CFR § 42.65(a). Patent Owner essentially demands that this new factor regarding “[t]he extent of the petition’s reliance on expert testimony” should force petitioners to violate the

requirement of 37 CFR § 42.65(a) that expert testimony “disclose the underlying facts or data on which the opinion is based.” We disagree that the Director intended such a result.

Furthermore, if there were merit to Patent Owner’s assertion that “the declaration largely mirrors the wording and argument made in the Petition,” surely Patent Owner would have been able to find more than a single alleged example. Paper 7, 21. That some phrasing in the Petition mirrors the testimony of Dr. Wolfe merely demonstrates that Petitioner relied on the sound judgment and focused analysis of Dr. Wolfe based on his decades of experience in the field.

Compelling Economic or National Security Interests

Patent Owner’s assertions regarding “economic or national security interests” are similarly hollow. Paper 7, 23-24. Patent Owner does not even allege any “national security interests” that would arise from the claimed technology⁴. *Id.* Similarly, economic interests favor institution as allowing Patent Owner to continue to assert claim scope that ensnares known prior art, and therefore that which rightfully belongs to the public, would allow Patent Owner to hold an unjust

⁴ Patent Owner’s comments regarding possible restrictions again “foreign entities” pursuing IPR challenges ignore the fact that Patent Owner’s parent company is itself a foreign entity (Israeli). EX1038, p. 1

monopoly on such technology. Such an artificial monopoly would have negative economic consequences for the public by restricting the free market to determine the fair price for such technology that is rightfully within the public domain.

V. THE TEXT OF 35 U.S.C. § 314(c) IS CONTRARY TO THE TYPE OF WRITTEN DECISION THAT PATENT OWNER IS REQUESTING HERE

To the extent Patent Owner is requesting a decision that is silent on a determination of whether the IPR grounds in the Petition demonstrate a reasonable likelihood to prevail on at least one claim, Patent Owner overlooks the text of the statute. There is no dispute that §314(a) includes the word “may” such that the Director has discretion to grant or deny institution of review. *See* 35 U.S.C. § 314(a). But the statute does not end there. Nor should the written decision in this case.

Reading further, it is clear that the text of §314(c) includes the term “shall” and offers no discretion on what must be included in writing from the Office. And it is straight forward: “The Director *shall* notify the petitioner and patent owner, in writing, of the Director’s *determination under sub (a)*.” *See* 35 U.S.C. § 314(c). In other words, §314(c) does not provide any option for a decision at the institution stage (grant or denial) that is silent on the “determination under subsection (a),” which must be a specific type of determination. Namely, the term “determine” appears in §314(a) to describe the reasonable-likelihood-to-prevail determination based on the merits of the prior art grounds presented in the Petition:

§314

(a)Threshold.—

The Director may not authorize an inter partes review to be instituted unless the Director *determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.*

...

(c)Notice.—

The Director *shall* notify the petitioner and patent owner, in writing, of the Director’s *determination under subsection (a)*, and shall make such notice available to the public as soon as is practicable. Such notice shall include the date on which the review shall commence.

See 35 U.S.C. § 314.

Thus, fulfillment of the statute is achieved when the written institution decision expresses the “determination” of whether the IPR grounds in the Petition demonstrate a reasonable likelihood to prevail on at least one claim. *Id.* But Patent Owner’s brief (Paper 7) appears to request the opposite. Worse yet, Patent Owner’s brief is distinct from the information that must be weighed in order to achieve “the Director’s determination under subsection (a).” *Id.* In particular, §314(a) specifies that “the determination” should be based upon “the information presented in the petition filed under section 311 [the Petition] and any response filed under section

313 [the Preliminary Response].” *See* 35 U.S.C. § 314(a). Patent Owner’s brief (Paper 7) is neither of those.

For at least these reasons, the Director should reject Patent Owner’s request.

VI. PATENT OWNER IMPROPERLY REQUESTS RETROACTIVE APPLICATION OF DISCRETIONARY FACTORS THAT WERE NOT IN PLACE AT THE TIME THE PETITION WAS FILED

Patent Owner argues that discretionary denial is appropriate because the April 8, 2025 *Sotera* stipulation provided by Petitioner to Patent owner (prior to the much stricter stipulation discussed in §V.D, *supra*) “is not likely to moot Petitioner’s numerous invalidity arguments in the District Court with unpublished system art.” Paper 7, 17-19. However, such an assertion, and Patent Owner’s broader request for discretionary denial after submission of a *Sotera* stipulation by Petitioner, is an improper request for the Director to disregard binding rules that had been in place at the time the Petition was filed and retroactively apply a new set of discretionary denial factors that were not in place at the time Petitioner filed the Petition. Specifically, at the time the Petition was filed, the June 21, 2022, USPTO Director memo was still in effect. This memo stated that the Board “will not discretionarily deny institution of an IPR ... in view of parallel district court litigation where a petitioner stipulates not to pursue in a parallel district court proceeding the same grounds as in the petition or any grounds that could have reasonably been raised in

the petition”—a so-called *Sotera* stipulation. The Director stated that this rule—which was phrased in absolute terms (“will not”) and admitted of no exceptions—was “issued under the Director’s authority to issue binding agency guidance.” *Apple Inc. v. Vidal*, 63 F.4th 1, 9 (Fed. Cir. 2023). Patent Owner now improperly requests that the Director ignore this “binding agency guidance” that was in place at the time the Petition was filed and retroactively apply new guidance that could not have been foreseen at the time of filing. Such a request by Patent Owner is improper.

Petitioner properly relied on the “binding agency guidance” of the June 2022 Memo in place at the time the Petition was filed based on the knowledge that submission of a *Sotera* stipulation, as provided by Petitioner here, served to completely prevent discretionary denial based on the parallel litigation. Patent Owner now improperly asks that the director apply the rescission of the June 2022 Memo to retroactively apply to Petitions filed prior to the Rescission of the memo and disregard Petitioner’s reliance on the June 2022 Memo in violation of the APA’s prohibition on arbitrary and capricious actions. Whether the Rescission is properly characterized as a binding, substantive rule (that the USPTO was prohibited from adopting absent notice-and-comment rulemaking) or mere guidance, the Rescission should not be applied retroactively to petitioners that already filed IPR petitions in reliance on established rules. Retroactive application of the Rescission to the current Petition would be “arbitrary, capricious, an abuse of discretion, or otherwise not in

accordance with law,” and therefore must be “h[e]ld unlawful and set aside.” 5 U.S.C. § 706(2)(A). Unlike policy statements, only substantive rules may ever be applied retroactively, and even they “will not be construed to have retroactive effect unless their language requires this result.” *Id.* at 208 (“Retroactivity is not favored in the law.”); see also *Kirwa v. U.S. Dep’t of Def. (Kirwa I)*, 285 F. Supp. 3d 21, 41 (D.D.C. 2017) (a “new rule” that “effects a substantive change from the agency’s prior regulation or practice” “is impermissibly retroactive”).

In the June 2022 Memo, the Director restricted her own discretion. That restriction vested Petitioner with a legitimate entitlement to have its filed IPR petitions considered on the merits upon presenting a *Sotera* stipulation, without the potential for discretionary denial based on parallel litigation. As such, discretionary denial of the present petition based on the parallel litigation based on retractive application of the Rescission would deprive Petitioner of the due process guaranteed under the Constitution. *Kirwa I*, 285 F. Supp. 3d at 41 (quoting *De Niz Robles v. Lynch*, 803 F.3d 1165, 1171–72 (10th Cir. 2015) (Gorsuch, J.)) (“constitutional protections sounding in due process and equal protection, as embodied in our longstanding traditions and precedents addressing retroactivity in the law” may also “constrain retroactive application.”).

Furthermore, the APA requires all rules to be adopted through notice-and-comment procedures, save for “interpretative rules, general statements of policy, or

rules of agency organization, procedure, or practice.” 5 U.S.C. § 553(b). Regardless of how the agency characterizes it, an agency pronouncement is a “binding,” substantive rule if it “effect[s] a change in existing law or policy or ... affect[s] individual rights and obligations.” *Coal. for Common Sense in Gov’t Procurement v. Sec’y of Veterans Affs.*, 464 F.3d 1306, 1317 (Fed. Cir. 2006). The agency’s Rescission did both, and thus required notice-and-comment rulemaking.

The Director’s June 2022 Memo created an absolute rule: presenting a *Sotera* stipulation was “dispositive by itself” of the Board’s ability to discretionarily deny institution based on parallel district-court litigation. Post-Rescission, the opposite is true: a *Sotera* stipulation is deemed merely “relevant.” *See CropLife Am. v. EPA*, 329 F.3d 876, 883 (D.C. Cir. 2003) (rejecting agency’s characterization of directive as mere statement of policy because “[t]he directive clearly establishes a substantive rule declaring that third-party human studies are now deemed immaterial in EPA regulatory decision making”). Indeed, the Board itself has already acknowledged the Rescission as carrying the force of a “change of binding guidance.” *E.g., HP Inc. v. Universal Connectivity Techs., Inc.*, IPR2024-01428, Paper 12 at 1 (PTAB Apr. 8, 2025). As such, the Rescission of an absolute rule that the Director deemed as “binding” requires notice-and-comment rulemaking. *Gen. Elec. Co. v. EPA*, 290 F.3d at 383 (D.C. Cir. 2002) (“[A]n agency pronouncement will be considered

binding as a practical matter if it either appears on its face to be binding, or is applied by the agency in a way that indicates it is binding.”).

Additionally, under the change-in-position doctrine, agencies may not change their existing policies unless “they provide a reasoned explanation for the change, display awareness that they are changing position, and consider serious reliance interests.” *FDA v. Wages & White Lion Invs., L.L.C.*, 145 S. Ct. 898, 917 (2025) (cleaned up). Because there is no dispute that the “agency changed existing policy,” the sole question presented by the doctrine here is: “Did the agency display awareness that it is changing position and offer good reasons for the new policy,” while being “cognizant that longstanding policies may have engendered serious reliance interests that must be taken into account”? *Id.* at 918 (cleaned up). Even if the June 2022 Memo were considered to be non-binding, Memo provided (in unqualified terms) that “the PTAB will not discretionarily deny institution of an IPR ...in view of parallel district court litigation where a petitioner” presents a *Sotera* stipulation. Discretionary denial of the Petition here, where Petitioner has provided a *Sotera* stipulation (prior to the stricter stipulation discussed in §V.D, *supra*), based on the parallel litigation would be a clear change in position. The Rescission cannot reasonably be applied to parties that prepared and filed petitions at considerable expense, presented *Sotera* stipulations, and altered their litigation strategies in accordance with those stipulations, all in reliance on the June 2022 Memo and before

the Rescission. *See Am. Bar Ass'n v. U.S. Dep't of Educ.*, 370 F. Supp. 3d 1, 33 (D.D.C. 2019) (granting summary judgment for plaintiffs claiming that application of changed standards to deny relief was arbitrary and capricious under 5 U.S.C. § 706(2)).

Additionally, a failure to consider Petitioner's most recent, broader stipulation would also be improper retroactive application of new discretionary denial rules to the present case which was pending prior to the recent shift in the Office's application of the Fintiv factors as indicated in the decision in Tesla and IPR2025-00354, Paper 11.

Finally, Patent Owner improperly requests retroactive application of discretionary denial factors that were not in existence at the time the Petition was filed, including the length of time that "the '698 Patent has been in force," whether the Petition is based on "changes in the law or new judicial precedent," and alleged "compelling economic or national security interests." Paper 7, 23-24. Retroactive application of these additional factors that were not part of the existing USPTO guidance at the time of filing of the Petition would similarly be improper.

VII. CONCLUSION

For the reasons discussed above, discretionary denial under either § 314(a) is not warranted.

Respectfully submitted,

Dated: July 9, 2025

/Joshua A. Griswold/
Joshua A. Griswold, Reg. No. 46,310
Michael T. Hawkins, Reg. No. 57,867
Kenneth W. Darby Jr., Reg. No. 65,068
Yao Wang, Reg. No. 61,757
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
IPR56224-0008IP1@fr.com
T: 202-783-5070
F: 877-769-7945

Attorneys for Petitioner

CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24, the undersigned hereby certifies that the word count for the foregoing Petitioner's Opposition to Patent Owner's Discretionary Denial Brief totals 11,428 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Respectfully submitted,

Dated: July 9, 2025

/Joshua A. Griswold/
Joshua A. Griswold, Reg. No. 46,310
Michael T. Hawkins, Reg. No. 57,867
Kenneth W. Darby Jr., Reg. No. 65,068
Yao Wang, Reg. No. 61,757
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
IPR56224-0008IP1@fr.com
T: 202-783-5070
F: 877-769-7945

Attorneys for Petitioner

CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(1) and 42.6(e)(4)(iii), the undersigned certifies that on July 9, 2025, a complete and entire copy of this Petitioner's Opposition to Patent Owner's Discretionary Denial Brief and added supporting exhibits are provided via email to the Patent Owner via electronic mail on Patent Owner's lead and backup counsel listed below at the following email addresses:

Brian W. Oaks
Aashish G. Kapadia
Kevin J. Meek
Syed K. Fareed
MCDERMOTT WILL & EMERY LLP
IPR-Stratasys-MWE@mwe.com

Attorneys for Patent Owner

/Li Feng/

Li Feng
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
lfeng@fr.com